Coleman®

MOBILE HOME DIVISION

PRESIDENTIAL GAS FURNACES

SERVICE MANUAL

Form A-457

Price: $1.00

TABLE OF CONTENTS

INTRODUCTION 2
SPECIFICATIONS 3
ACCESSORIES 4
APPLICATION 5, 6
FURNACE INSTALLATION 7, 8
INSTALLATION INSTRUCTIONS 9-15
- GAS VALVE
- PILOT ADJUSTMENT
- GAS CONVERSION
- HEAT EXCHANGER
- AIR REQUIREMENTS
- FAN/LIMIT SWITCHES

THERMOSTATS 16, 17
LIGHTING INSTRUCTIONS 18
ELECTRICAL CIRCUITS 19-21
WIRING DIAGRAMS 22, 23
AIR CONDITIONING BLOWER INSTALLATION 24-30
- BLOWER WIRING DIAGRAMS

HEATING SERVICE CHARTS 31

INTRODUCTION

The Coleman PRESIDENTIAL Mobile Home Furnace is designed for total year around air conditioning comfort. It is constructed to provide maximum heating efficiency in winter and cooling comfort during the summer months.

Additional construction features are:

1. The Coleman PRESIDENTIAL furnace has an adjustable duct connector. By having various lengths, we can cover a wide range of depths.
2. There is a choice of eight locations for the fresh air intake duct.
3. The PRESIDENTIAL has a one-piece ribbed casing that is lined with foil-faced fiberglass.
4. The blower is rubber mounted to provide complete motor hum isolation.
5. There are no duct connector clamps.
6. The pilot orifice does not have to be changed when converting from one gas to another.
7. The PRESIDENTIAL furnace fan switch has a fast "ON" time to provide more blower "ON" time which will prevent the air from stratifying.
8. Return air is preheated in the blower compartment to provide more efficiency.
9. The two-stage valve provides quiet burner ignition.
10. A large sight glass has been provided to observe the pilot and burner operation.

Air conditioning may be installed at any time without modification of the furnace. Provision has been made for the addition of the coil at the bottom of the furnace. The pre-charged refrigerant lines connecting the condensing unit to the evaporator coil employ a quick connect fitting at the coil and at the condenser end. The valves in the fittings are self opening when the connection is made and self sealing when the connection is broken. The self-sealing feature allows complete mobility of the equipment without loss of refrigerant.

SPECIFICATIONS

MOBILE HOME

PRESIDENTIAL GAS FURNACES

CONTAINS SINGLE SPEED HEATING BLOWER OR
3-SPEED HEATING AND AIR CONDITIONING BLOWER

SPECIFICATIONS

MODEL NO.		7660	7670	7680	7660	7670	7680
SERIES	Nat.	*756/856	*756/856	*756/856	846	846	846
	L.P.	*759/859	*759/859	*759/859	849	849	849
Input – Btuh		60,000	70,000	80,000	60,000	70,000	80,000
Output – Btuh		48,000	56,000	64,000	48,000	56,000	64,000
Power Supply		115V/60Cy/1Ph			115V/60Cy/1Ph		
Blower Assembly		7660-590	7670-590	7680-590	7660-693	7670-693	7680-693
MOTOR	Speed Tap	—	—	—	Low	Medium	High
	Horsepower (H.P.)	1/10	1/6	1/6	1/2		
	Volts/Cycle/Phase	115/60/1			115/60/1		
	RPM	800	800	800	735	911	1030
	Amps.	5.0	7.8	7.8	6.0	6.6	7.0
	Watts	295	510	500	475	610	665
	Static Pressure	.15	.15	.20	.20	.30	.30
BLOWER	Air Delivery – C.F.M.	600	730	715	725	880	1025
	Wheel	9" x 7"	10-3/4" x 7"	10-3/4" x 7"	12-5/8" x 7"		
	Scroll	9"	10"	10"		12"	

A.G.A. REQUIREMENTS

NOTE: For elevations above 2,000 feet, derate furnace 4 percent for each 1,000 feet of elevation above sea level.

C.G.A. REQUIREMENTS

NOTE: Approved for 0 to 4,500 feet elevation, for elevation above 4,500 feet derate furnace 4 percent for each 1,000 feet of elevation above sea level.

* The 7600-700 Series furnace is equipped with a 20 VA Transformer.

The basic difference between the 7600-700 series furnace and the 7600-800 series furnace is the transformer.

The 7600-700 series furnace is equipped with a 20 VA transformer. See figures 22, 23 and 24.

The 7600-800 series furnace is equipped with a 40 VA transformer. See figures 26, 27 and 28.

This difference in transformers also means a slight difference in the wiring of this furnace when installing air conditioning. When installing air conditioning with this furnace it is important that a determination be made as to the size transformer installed in the furnace. Then, consult the appropriate wiring diagram shown at the end of this book.

LOOK AT THIS WIDE CHOICE OF AVAILABLE OPTIONS

Note: Oil Solar-Pak Vaporizing (Pot Type) Furnaces are available as a regular stock item.

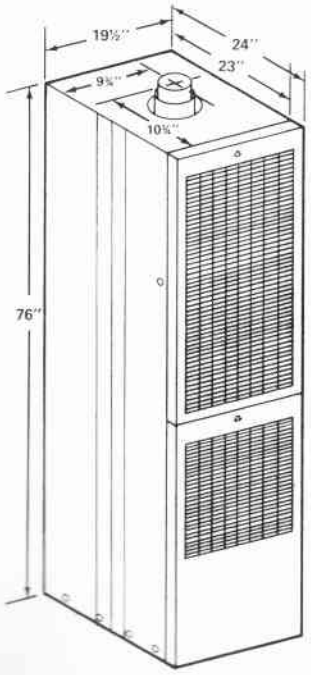
	PRESIDENTIAL SYSTEM with BTU Output Ratings Listed	DELUXE EXPANSION VALVE A-COIL (Tons)	CUSTOM EXPANSION VALVE A-COIL (Tons)	STANDARD BLOWER (SHIPPED WITH FURNACE)	BLOWER CONVERSION FOR A/C (PACKAGE INCLUDES THERMOSTAT SUB BASE AND FILTER)	CONDENSERS (Tons)	PRE-CHARGED LINES	THERM-OSTAT (SHIPPED WITH FURNACE)	FILTER
GAS	7660-856/9 Htg. Only 48,000 BTU	6256-830 for 2½-3-3½	Available in Mid-1971	Single speed Htg. Only	7660-6921 for 2-2½ ton 7660-6931 for 3 ton 7660-6901 for 3½ ton	Presidential 2-2½-3-3½ Polar Prince 2-2½-3	15' 25' 40'	Heating Only	Optional
	7670-856/9 Htg. Only 56,000 BTU	6256-830 for 2½-3-3½		Single speed Htg. Only	7660-6921 for 2-2½ ton 7660-6931 for 3 ton 7660-6901 for 3½ ton	Presidential 2-2½-3-3½ Polar Prince 2-2½-3	15' 25' 40'	Heating Only	Optional
	7680-856/9 Htg. Only 64,000 BTU	6256-830 for 2½-3-3½		Single speed Htg. Only	7660-6921 for 2-2½ ton 7660-6931 for 3 ton 7660-6901 for 3½ ton	Presidential 2-2½-3-3½ Polar Prince 2-2½-3	15' 25' 40'	Heating Only	Optional
	7660-846/9 A/C Ready 48,000 BTU	6256-830 for 2½-3-3½		3 speed for 2-2½-3 ton	7660-6901 for 3½ ton	Presidential 2-2½-3-3½ Polar Prince 2-2½-3	15' 25' 40'	Heating-A/C	Standard
	7670-846/9 A/C Ready 56,000 BTU	6256-830 for 2½-3-3½		3 speed for 2-2½-3 ton	7660-6901 for 3½ ton	Presidential 2-2½-3-3½ Polar Prince 2-2½-3	15' 25' 40'	Heating-A/C	Standard
	7680-846/9 A/C Ready 64,000 BTU	6256-830 for 2½-3-3½		3 speed for 2-2½-3 ton	7660-6901 for 3½ ton	Presidential 2-2½-3-3½ Polar Prince 2-2½-3	15' 25' 40'	Heating-A/C	Standard

ACCESSORIES

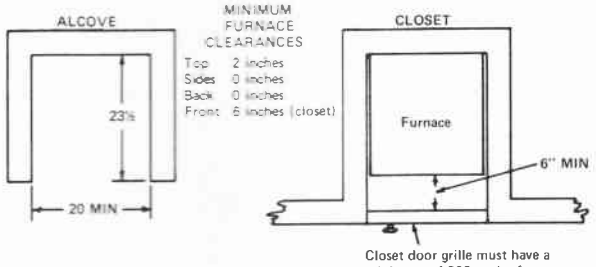
Part Number	Item	Used On
7660-2831	Ceiling Ring (Pkg. 1)	7600 Series
7660-2841	Ceiling Ring (Pkg. 25)	7600 Series
6256-830	Air Conditioning Cooling Coil (Expansion Valve)	7600 Series
6256-831	Air Conditioning Cooling Coil (Expansion Valve)	7600 Series
6256-832	Air Conditioning, Cooling Coil (Expansion Valve)	7600 Series
6256-6151 6	15' Precharged Line	7600 Series
6256-6251 6	25' Precharged Line	7600 Series
6256-6401 6	40' Precharged Line	7600 Series
6256-7151 6*	15' Precharged Line	2½-3 ton units
6256-7251 6*	25' Precharged Line	2½-3 ton units
6256-7401 6*	40' Precharged Line	2½-3 ton units
6256-8151 6*	15' Precharged Line	3½ ton units
6256-8251 6*	25' Precharged Line	3½ ton units
6256-8401 6*	40' Precharged Line	3½ ton units
6256-8601	Rear Intake Precharged Tubing Kit	7600 Series
7660-5331	Filter Assembly	7660, 7670, 7680
7660-5491	Return Air Grille	7600 Series
7660-6151	Front Supply Line (13" extended, Pkg. 1)	7600 Series
7660-6161	Front Supply Line (18½" extended, Pkg. 1)	7600 Series
7660-6431	Front Supply Line (13" extended, Pkg. 6)	7600 Series
7660-6451	Front Supply Line (18½" extended, Pkg. 6)	7600 Series
7660-6691	14" Deep Duct Connector (Pkg. 1), 8¼" to 11¼" Depth	7600 Series
7660-6791	14" Deep Duct Connector (Pkg. 6), 8¼" to 11¼" Depth	7600 Series
7660-6191	16" Deep Duct Connector (Pkg. 1), 8¼" to 11¼" Depth	7600 Series
7660-6291	16" Deep Duct Connector (Pkg. 6), 8¼" to 11¼" Depth	7600 Series
7660A6901	4 Speed Air Conditioning Blower Pkg.	7600 Series
7660-6921	2 Speed Air Conditioning Blower Pkg.	7600 Series
7660-6931	3 Speed Air Conditioning Blower Pkg.	7600 Series
7660-7051	Roof Jack Wedge (2 x 12 pitch, pkg. 1)	7600 Series
7660-7071	Roof Jack Wedge (2 x 12 pitch, pkg. 6)	7600 Series
7660-7061	Roof Jack Wedge (4 x 12 pitch, pkg. 1)	7600 Series
7660-7081	Roof Jack Wedge (4 x 12 pitch, pkg. 6)	7600 Series
7660-6221	Standard Duct Connector (14" Pkg. 1), ¾" to 2¼" Depth	7600 Series
7660-6241	Standard Duct Connector (14" Pkg. 6), ¾" to 2¼" Depth	7600 Series
7660-6211	Standard Duct Connector (16" Pkg. 1), ¾" to 2¼" Depth	7600 Series
7660-6231	Standard Duct Connector (16" Pkg. 6), ¾" to 2¼" Depth	7600 Series
7670-6191	Medium Duct Connector (16" Pkg. 1), 3⅝" to 5" Depth	7600 Series
7670-6291	Medium Duct Connector (16" Pkg. 6), 3⅝" to 5" Depth	7600 Series
7670-6201	Medium Duct Connector (14" Pkg. 1), 3⅝" to 5" Depth	7600 Series
7670-6301	Medium Duct Connector (14" Pkg. 6), 3⅝" to 5" Depth	7600 Series
7660-6251	Extended Duct Connector (16" Pkg. 1), 4¼" to 7¼" Depth	7600 Series
7660-6271	Extended Duct Connector (16" Pkg. 6), 4¼" to 7¼" Depth	7600 Series
7660-6261	Extended Duct Connector (14" Pkg. 1), 4¼" to 7¼" Depth	7600 Series
7660-6281	Extended Duct Connector (14" Pkg. 6), 4¼" to 7¼" Depth	7600 Series
7660-6701	Adapter Package (Pkg. 1) for 14" Duct System	7600 Series
7660-6201	Adapter Package (Pkg. 1) for 16" Duct System	7600 Series
7670-3701	Cooling Thermostat Sub-base	7600 Series

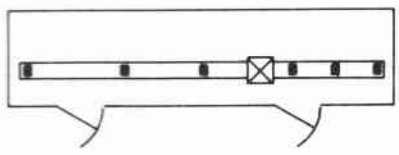
*6 PRECHARGED LINE NUMBERS ENDING IN 6 ARE INSULATED.

INSTALLATION SPECIFICATIONS



Both state and local codes should be consulted before installing the furnace.





A typical distribution system is shown above. The main duct should be no smaller than 4 x 16 with any branch ducts at least 3 x 8. Registers should have a free area (except for bathroom) of 28 square inches minimum free area. In no case should less than six floor registers be used. Better results are generally obtained with seven or eight registers.

APPLICATION

The performance of a heating or cooling system depends first of all on the quality of the equipment; secondly, on the design of the distribution and return air system; and last but not least, the workmanship used in installing the system.

The best of equipment, when improperly installed, will not deliver satisfactory performance to the customer.

When the application of heating equipment or cooling equipment is to be made, the procedure to use in the selection and application is as follows:

1. Calculate the heating or cooling load.
2. Select equipment.
3. Double check equipment blower capacities.

CALCULATING THE SYSTEM LOAD

To insure correct system sizing, a survey should be made of the structure to be air conditioned. The heat loss and heat gain should be calculated in accordance with the procedure contained in the National Warm Air Heating and Air Conditioning Association Manual J.

COMPLY WITH LOCAL CODES

The installer should familiarize himself with and comply with all local codes and regulations which govern the installation of this type equipment. Local codes and regulations take precedent over any recommendations contained in these instructions.

In lieu of Local Codes, the equipment should be installed in accordance with the National Electrical Code, and in accordance with the recommendations made by the National Board of Fire Underwriters.

CHECK ELECTRICAL POWER SUPPLY

The electrical power supply should be checked to determine if adequate power is available, and near constant voltage can be maintained. If there is any question concerning the power supply, contact the local power company for corrections; otherwise, unsatisfactory performance may result.

ROOF JACK

A close inspection of the cut-a-way drawing of the roof jack and furnace shown in Figure 1, will show that both the flue pipe and the combustion air tube must be securely attached to the furnace. This is to insure a complete circuit for the combustion air and flue gases. *The furnace will not operate unless the roof jack has been properly installed.*

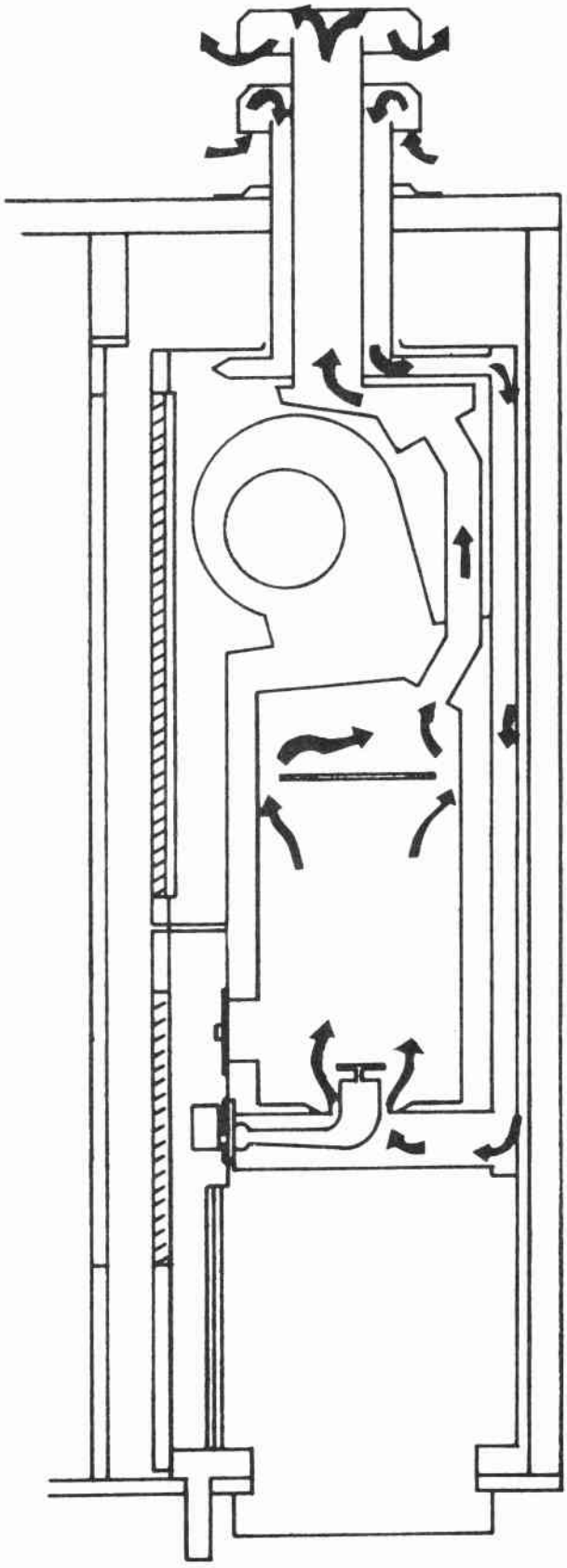


Figure 1.

APPLICATION

The telescoping flue pipe must be firmly seated on the furnace flue collar and secured with a sheet metal screw. The telescoping combustion air tube should be pulled down and sealed against the top of the air chamber located inside the top of the furnace. The straps, attached to the combustion air tube, should be secured to the top of the furnace with sheet metal screws. Sheet metal screws should not be longer than ½ inch.

Problems associated with improper roof jack installation.

Problem: The main burner comes on normally. Main burner flame and pilot flame begins to lift immediately, and floats to the top of the heat exchanger then goes out.

Cause: This is an indication that:

1. The inner flue tube is missing or has not been securely sealed to the flue outlet of the furnace,
2. blocked flue.

This results in a recirculation of flue gases and extinction of main burner and pilot.

Solution:

1. Replace inner flue tube,
2. Secure the flue tube to the flue outlet of the furnace,
3. Remove block.

Problem: Pilot outage.

Cause: Combustion air tube not installed or not sealed against the top of the air chamber located inside the top of the furnace.

Reason:

1. Different pressure zone. Downdraft will extinguish pilot.
2. Drawing combustion air from inside the home. Defeats the purpose of sealed combustion.

Solution: Combustion air tube should be installed and sealed against the top of the air chamber located inside the top of the furnace.

A cut-a-way drawing of the roof jack is shown in Figure 2.

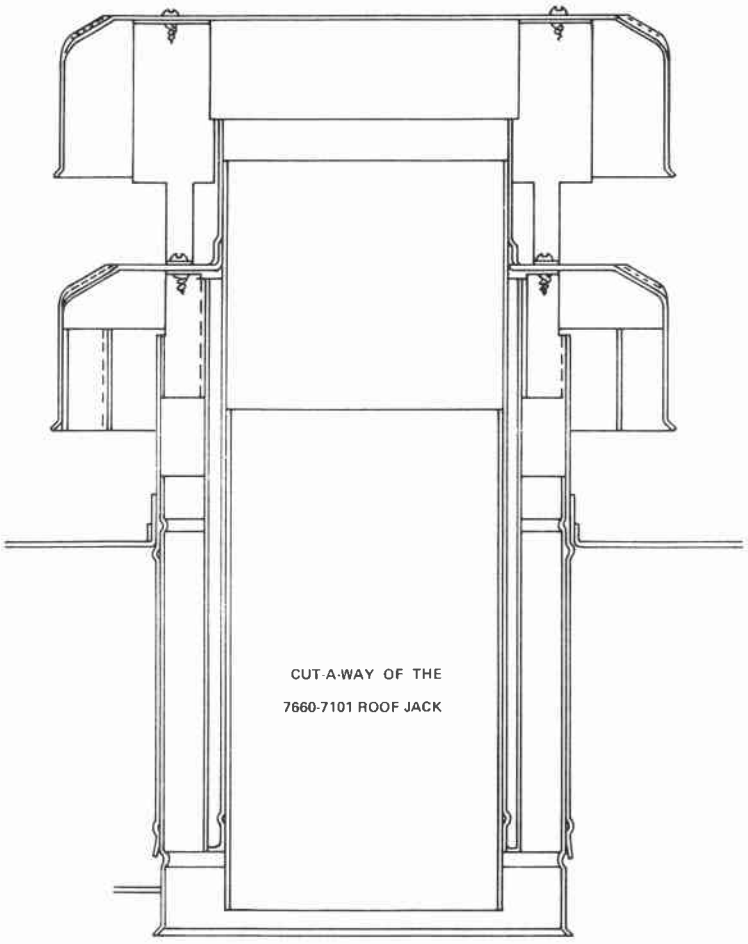
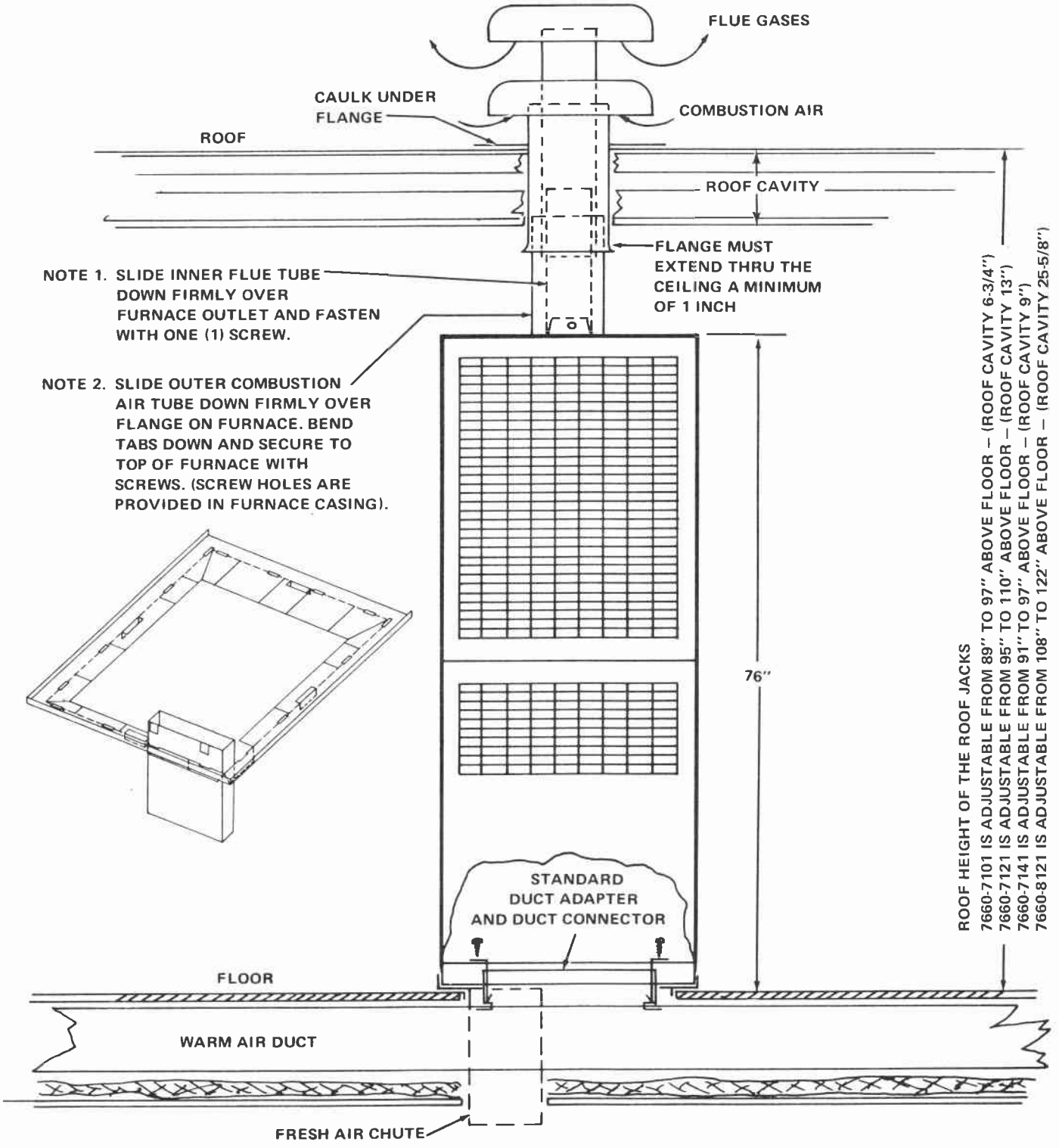
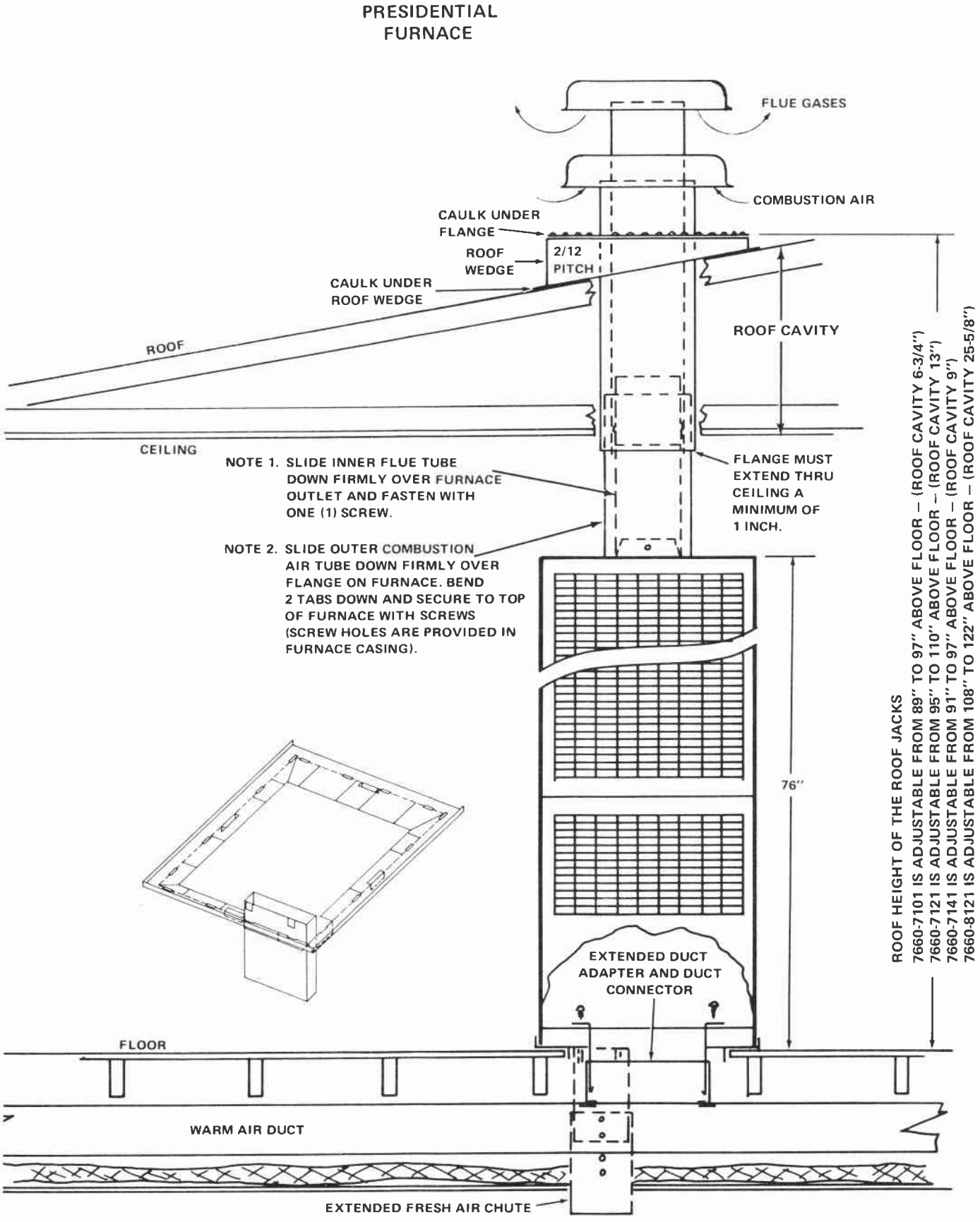


Figure 2.

PRESIDENTIAL FURNACE


FLUE GASES
CAULK UNDER FLANGE
COMBUSTION AIR
ROOF
ROOF CAVITY
FLANGE MUST EXTEND THRU THE CEILING A MINIMUM OF 1 INCH
NOTE 1. SLIDE INNER FLUE TUBE DOWN FIRMLY OVER FURNACE OUTLET AND FASTEN WITH ONE (1) SCREW.
NOTE 2. SLIDE OUTER COMBUSTION AIR TUBE DOWN FIRMLY OVER FLANGE ON FURNACE. BEND TABS DOWN AND SECURE TO TOP OF FURNACE WITH SCREWS. (SCREW HOLES ARE PROVIDED IN FURNACE CASING).
76"
STANDARD DUCT ADAPTER AND DUCT CONNECTOR
FLOOR
WARM AIR DUCT
FRESH AIR CHUTE
ROOF HEIGHT OF THE ROOF JACKS
7660-7101 IS ADJUSTABLE FROM 89" TO 97" ABOVE FLOOR – (ROOF CAVITY 6-3/4")
7660-7121 IS ADJUSTABLE FROM 95" TO 110" ABOVE FLOOR – (ROOF CAVITY 13")
7660-7141 IS ADJUSTABLE FROM 91" TO 97" ABOVE FLOOR – (ROOF CAVITY 9")
7660-8121 IS ADJUSTABLE FROM 108" TO 122" ABOVE FLOOR – (ROOF CAVITY 25-5/8")

FURNACE INSTALLATION



GAS PIPING

Route the gas piping or tubing to the furnace. Use ½" black iron pipe or ⅝" O.D. copper tubing. If the piping length exceeds 40', use ¾" black iron pipe or ¾" copper tubing.

When using natural gas, branch tubing may be copper internally tinned or copper tubing containing not more than 75 percent copper. When using L.P. gas, tubing may be type K. Be sure to check local authorities for any other requirements concerning gas piping. It is recommended that a main shut-off valve be located in the gas supply line external to the furnace. This shut-off valve is required by AGA as well as some local codes.

When making the connection at the gas control valve, use a wrench on the inlet side to prevent twisting the valve body which could result in service problems.

After connections have been made, be sure all joints are checked with soap suds to detect any leaks. This should also include a check of the furnace controls and piping. NEVER CHECK FOR LEAKS WITH A LIGHTED MATCH.

CAUTION: DO NOT TEST THE FUEL SYSTEM AT MORE THAN 14 INCHES WATER COLUMN AFTER FURNACE HAS BEEN CONNECTED TO FUEL LINE. ANY TEST CONDUCTED ABOVE 14 INCHES WATER COLUMN MAY DAMAGE THE FURNACE CONTROL VALVE AND VOID THE WARRANTY.

DESCRIPTION

The B57 Midgitrol (Coleman Part No. 7660-3261) is a combination gas valve which provides all manual and automatic control functions required for operation of gas fired heating equipment. This valve is suitable for use with all gases.

The B57 includes (1) permanently lubricated shear seal, disc type gas cock, (2) thermomagnet safety valve, (3) main line automatic valve, (4) pilot gas adjustment valve, and (5) pilot line filter and pressure regulator (optional).

OPERATION

The 100% shut-off pilot safety section operates from power (millivoltage) produced by a 2500G type thermocouple when sufficiently heated by pilot flame. In event of low unstable pilot flame or outage, safety valve shuts off all gas.

Main line automatic gas valve opens and closes in response to thermostat or other controls wired in 24 volt circuit. 24 volt power is provided by an external transformer.

INSTALLATION

Use valve within following operating ranges:
Maximum operating pressure: ½ psi (14" WC)
Minimum operating pressure: 1 oz. (2" WC)
Maximum ambient temperature: 175° F.

1. Valves with Part No. 7660-3261 are step open type and must be mounted upright in horizontal line.
2. Make sure all piping and tubing is free of foreign matter. Apply thread seal to male threads only.
3. Connect ¼" pilot tubing bween valve and pilot burner assembly. Pilot burner assembly must be mounted rigidly in a position where pilot will ignite main burner when it has been reduced to smallest flame which will hold thermomagnet safety valve open.
4. ⅛" external vent connection is located at outlet end of valve. Connect one end of vent tube to fitting on valve and position other end near, but not in, pilot flame. Main burner flame must not impinge on generator cartridge or vent tube.
5. Make sure all wiring connections are clean and tight. Screw thermocouple bushing in fingertight, plus ⅛ turn, with small wrench. DO NOT OVERTIGHTEN.
6. Refer to information furnished with furnace for proper heat anticipator setting.

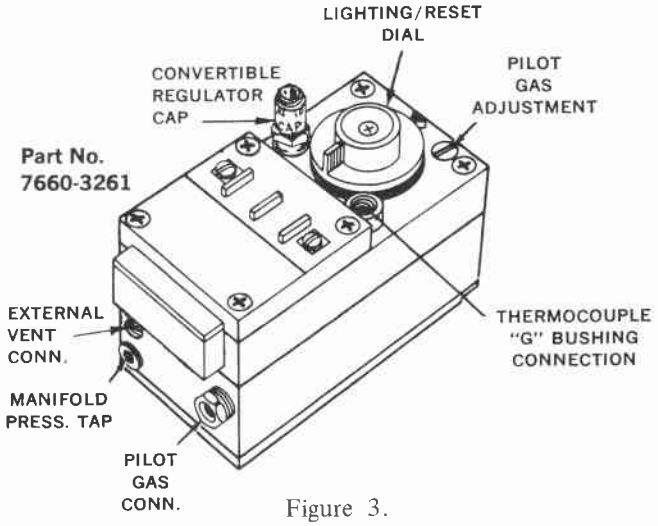
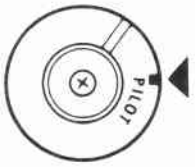
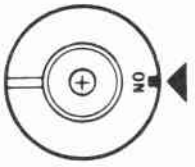


Figure 3.

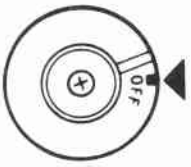
LIGHTING PROCEDURE



1. Turn thermostat to lowest setting. Turn to PILOT. Press dial in and light pilot. Hold for 60 seconds and release.



2. Turn dial counterclockwise to ON. Use this position for thermostat control. Set thermostat for desired room temperature.



3. Shut Down Procedure. Press dial in and turn clockwise to OFF. Use this position when complete shutdown is necessary. (Use PILOT position for temporary or seasonal shutdown.)

ADJUSTMENTS — See Fig. 3 for Location.

Pilot Gas Adjustment. Remove pilot adjustment cap screw and turn pilot adjustment screw to produce non-blowing blue flame covering top ¼" of thermocouple tip. Replace cap screw.

INSTALLATION INSTRUCTIONS

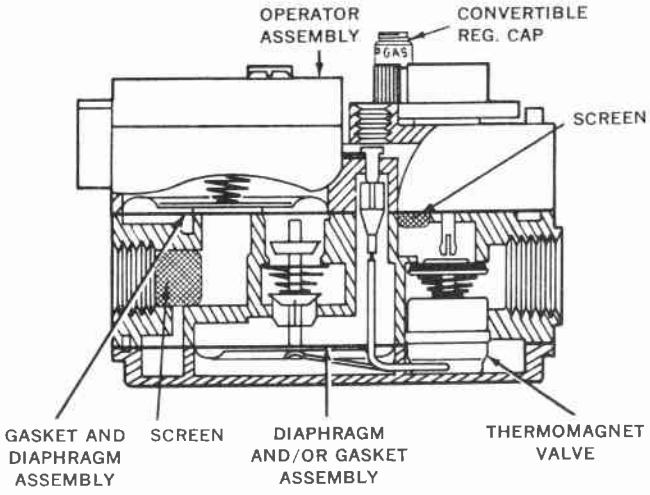


Figure 4. Typical Cross-sectional

MILLIVOLTMETER TEST

Use 0-50 millivolt scale. Place meter test probes as shown below. If meter needle moves to left of zero or no reading is indicated, reverse probes. Take all readings with pilot burning and thermostat contacts closed. (Main burner "ON.")

If reading is less than 7 millivolts:
1. Adjust pilot gas.
2. Clean primary air holes.
3. Clean pilot burner orifice.
4. Replace thermocouple.

REGULATOR CONVERSION

WARNING

When converting valve from or to LP gas use, it will be necessary to change main burner orifice. See furnace nameplate for complete instructions.

HOW TO CONVERT

To convert valve pressure regulator from liquefied petroleum gas to natural gas, or the reverse, invert the convertible regulator cap on the valve. See Fig. 3.

For Natural Gas:
Install convertible regulator cap so that hex portion and "NAT GAS" marking appears on upper end of cap. (See Figure 5)

For Liquefied Petroleum Gas:
Install convertible regulator cap so that hex portion is at lower end and "LP GAS" marking appears on upper end of cap. (See Figure 6)

CAUTION

When inverting the convertible regulator cap make sure that spring below cap is not misplaced.

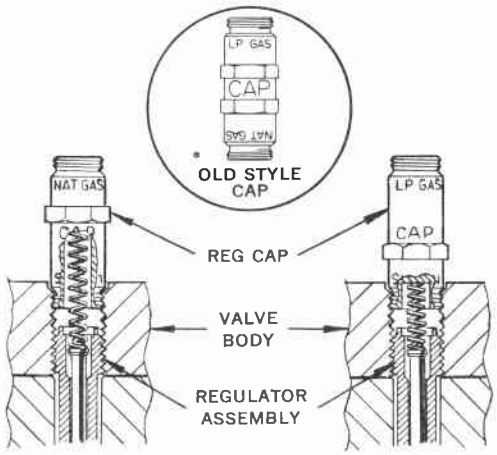


Figure 5. Cutaway View of Cap Installed for Natural Gas. Note Relaxed Spring.

Figure 6. Cutaway View of Cap Installed for L.P. Gas Usage. Note Compressed Spring.

*NOTE: Old style convertible regulator cap is identified by a double hex. New cap has only one hex for easier identification of gas conversion position.

REGULATOR ADJUSTMENT

The regulator has been factory adjusted to values stamped on valve.

For LP gas the regulator is not adjustable.

For natural gas use, the valve is equipped with a limited adjustment type regulator. To adjust regulator, install a measuring device in ⅛" NPT pressure tap near valve outlet. Remove convertible regulator cap and spring.

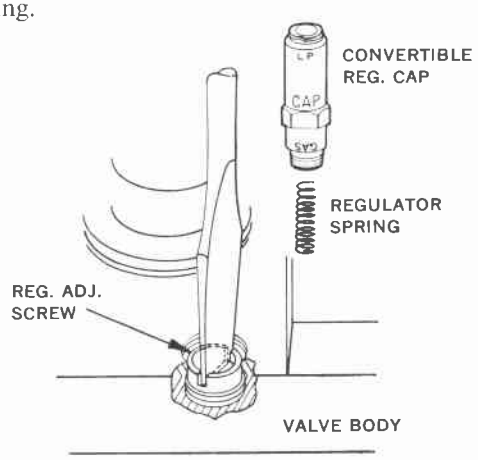


Figure 7. Adjusting Regulator for Nat. Gas

CAUTION

Do not stretch spring when removing from regulator stem.

Insert screwdriver into the two slots of regulator adjustment screw (See Figure 7). Turn adjustment screw clockwise to increase pressure, counterclockwise to decrease pressure. Replace regulator spring.

NOTE: Make sure regulator spring is firmly attached to regulator stem. Use a Phillips head screwdriver or similar blunt ended object to press spring down until you hear or feel it snap in place. Replace convertible regulator cap with "NAT GAS" marking in up position.

PILOT ADJUSTMENT

The pilot flame should be adjusted to bathe the end of the pilot thermocouple with approximately ½" of flame. The pilot flame should appear blue on natural gas, and blue with yellow tips if operating on L.P. gas. Remove the pilot adjusting screw cover cap from the control valve and adjust the underlying screw to obtain the proper pilot flame. Replace the cover cap in the control valve.

GAS CONVERSION INSTRUCTIONS

The PRESIDENTIAL series furnaces are equipped to burn either natural gas or LP gas. By using the proper orifice and adjusting the pressure regulator and pilot, the furnace can be converted to burn either gas.

For LP gas, an LP gas identification tag should be wired to the burner manifold, the orifice in the burner should be marked "LP," and the pressure converter should be adjusted to the "LP" position.

For natural gas, a Natural gas identification tag should be wired to the burner manifold, the orifice in the burner should be marked "NAT," and the pressure converter should be adjusted to the "NAT" position.

The extra orifice and gas identification tag are in the cloth bag attached to the pilot line.

CONVERSION FROM NATURAL TO LP GAS

1. Be sure gas and electricity to appliance is shut off.
2. Disconnect pilot feed tube from valve.
3. Remove the two screws holding valve to valve bracket and pull valve with orifice holder back and out of burner support exposing the orifice. Change to burner orifice marked LP, found in the cloth bag attached to the pilot line.
4. Reverse valve regulator pressure converter to read LP Gas. See Fig. 6.
5. Push orifice holder back in place and replace the valve with the two screws previously removed. Connect pilot feed tube to valve. Be sure all connections are tight.
6. Wire LP identification tag to pilot line.
7. Store replaced orifice and Natural gas identification tag in cloth bag and attach to pilot line.
8. Use pilot adjusting screw to adjust pilot flame. See pilot adjustment.

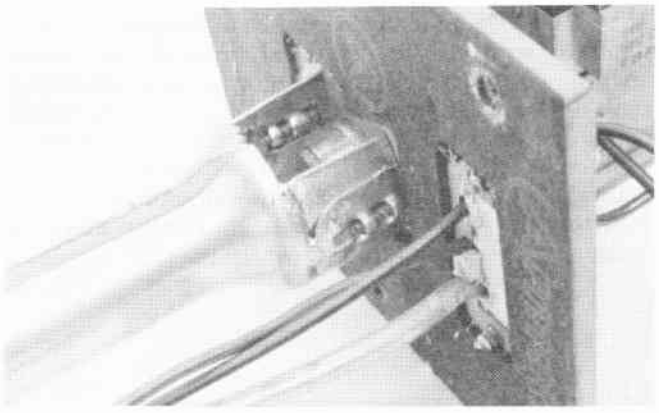
CONVERSION FROM LP TO NATURAL GAS

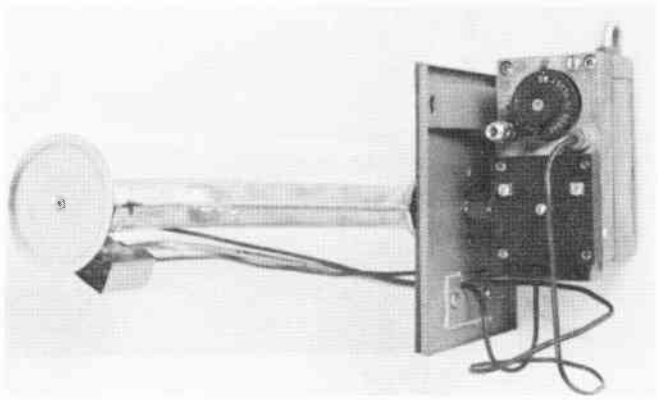
1. Be sure gas and electricity to appliance is shut off.
2. Disconnect pilot feed tube from valve.
3. Remove the two screws holding valve to valve bracket and pull valve with orifice holder back and out of burner support exposing the orifice. Change to burner orifice marked Nat, found in the cloth bag attached to the pilot line.
4. Reverse valve regulator pressure converter to read Nat. Gas. See See Fig. 5
5. Push orifice holder back in place and replace the valve with the two screws previously removed. Connect pilot feed tube to valve. Be sure all connections are tight.
6. Wire Natural gas identification tag to pilot line.
7. Store replaced orifice and LP gas identification tag in cloth bag and attach to pilot line.
8. Use pilot adjusting screw to adjust pilot flame. See pilot adjustment.

THE 7660-528 BURNER

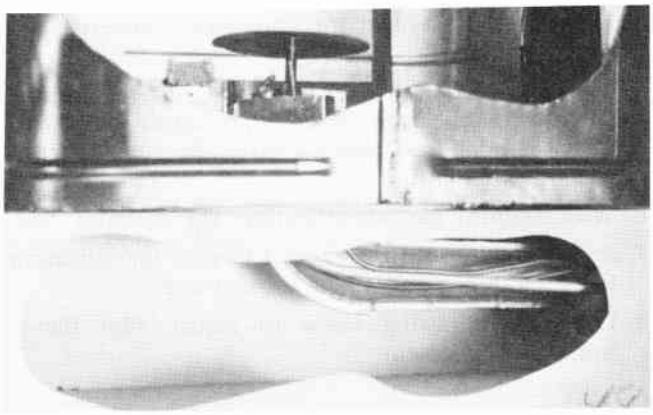
The 7660-528 burner is a mono-port type burner with a stainless steel flame spreader mounted above the burner port to spread the flame out nearer the walls of the heat exchanger. Just inside the burner port is a flame retainer that holds a portion of the gas flame down around the burner port.

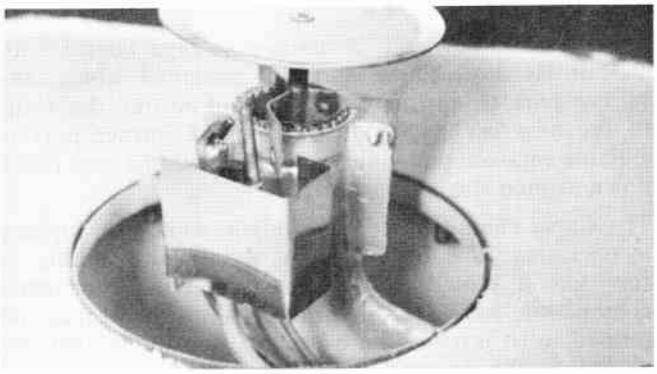
The flame should be slightly yellow while the furnace is operating. The burner flame should not rumble or roar like a blow torch (furnace receiving too much combustion air). The air shutter adjustment may be pushed in to provide more primary air and pulled out to reduce the amount of primary air being delivered to the burner flame. This adjustment depends upon the average winter temperature and the geographical location of the furnace.





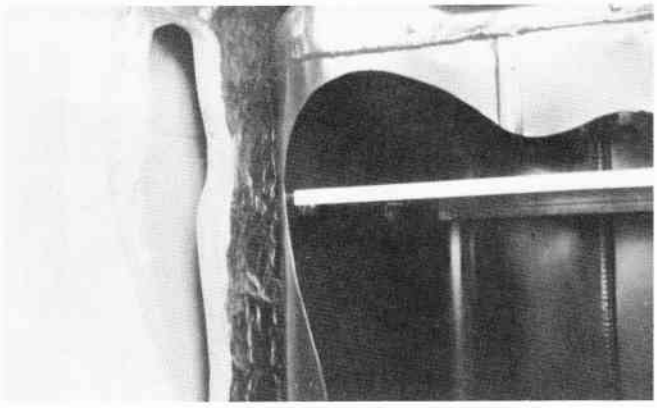
INSTALLATION INSTRUCTIONS

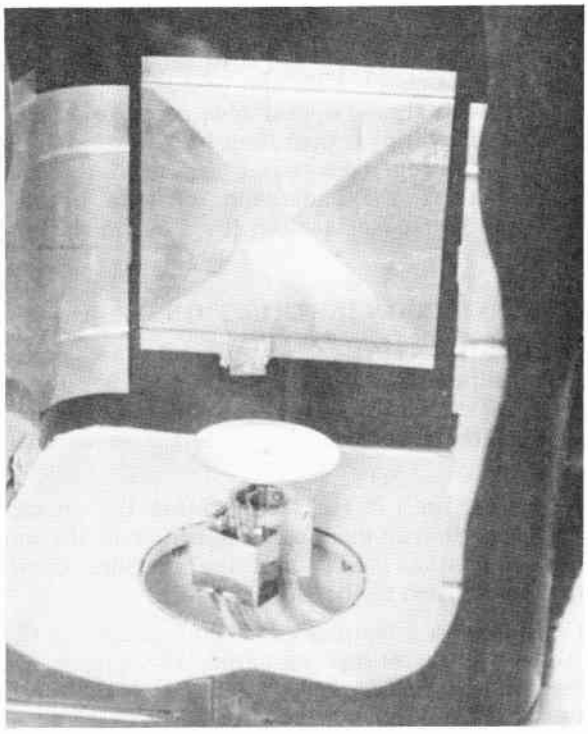




7660-575 HEAT EXCHANGER

The 7660-575 heat exchanger is constructed with stainless steel baffles installed around its lower, interior portion. This is to give greater protection against burnout from continuous contact with the burner flame. Located in the top area of the heat exchanger is a stainless steel baffle deflector to keep the direct upflow of heat from coming into immediate contact with the top of the heat exchanger. It also slows the rising heat down before it escapes up the flue.





REPLACING THE 7660-575 HEAT EXCHANGER

1. Turn off the electrical supply to the furnace.
2. Turn off the gas supply to the furnace.
3. Disconnect the roof jack from the furnace.
   a. Remove the screws from the roof jack hold-down straps and slide the combustion air pipe up out of the way.
   b. Remove the screw from the vent-pipe and slide it up out of the way.
4. Disconnect the fuel line at the union, next to the gas control valve, and from the gas supply line below the floor. Remove this section of pipe so that the furnace can be removed later.
5. Detach electrical supply and thermostat wires from the furnace.
6. Remove the furnace blower at this time by (a) disconnecting the electrical leads from the blower, (b) removing the screws from the lower side of the angle that holds the blower to the furnace, (c) sliding the blower forward out of the furnace and setting it out of the way.
7. Remove the two panels from the coil cavity of the furnace.
8. Remove the duct chute and duct connector from the bottom of the furnace. Take the four screws out of the top of the duct chute and lift out.
9. Detach the furnace straps, located at top, back corners of furnace, from the wall.
10. Remove the two nails or screws used to anchor the furnace to the floor. Each anchor is located just a few inches back from the front corners of the base of the furnace.

11. Slide the furnace out of the closet or alcove and lay it on its back.
12. Remove the nuts from the studs around the flue at the top of the furnace.
13. To remove the burner from the furnace, remove the six screws from the plate behind the control valve that fastens it to the furnace. Tilt the burner end down out of the heat exchanger and withdraw burner from combustion air tube.
14. Remove the nuts from the studs that are located inside the combustion air tube and at its very back.
15. Remove the mid-panel that separates the upper and lower areas of the furnace.
16. Remove the cover plate from the electrical control box. Remove the two screws in the control box that are located along the side nearest the furnace wall.
17. Remove the internal front panel of the furnace by removing the screws from around its sides. Lift both the furnace's internal panel and the heat exchanger out of the furnace body.
18. Remove the screw from the view plate on the internal panel and detach the panel from the heat exchanger.
19. Install the new heat exchanger, gaskets and other furnace parts by using the above procedures in reverse order.
20. Use the installation instructions for correct procedure in re-installing the furnace.

AIR REQUIREMENTS

The proper operation of any Mobile Home furnace is dependent upon satisfying the requirements for four types of air.

1. *Combustion air* — As seen in the cut-a-way view of the PRESIDENTIAL furnace, combustion air is supplied to the burner through the roof jack. Down the back of the furnace to an area below the combustion chamber. Primary air for combustion is drawn into the venturi of the burner by the action of gas velocity (aspiration) in the venturi. This air and gas mixture is thoroughly mixed in the mixing chamber and discharged upward against the flame spreader where it is ignited by the pilot.

   Combustion is completed with the addition of secondary air around the outside of the burner into the combustion chamber.

   The hot products of combustion then rise in the heat exchanger and pass to the outside through the flue and roof jack. All combustion air is taken from the outside resulting in a system referred to as sealed combustion. See Figure 8 .

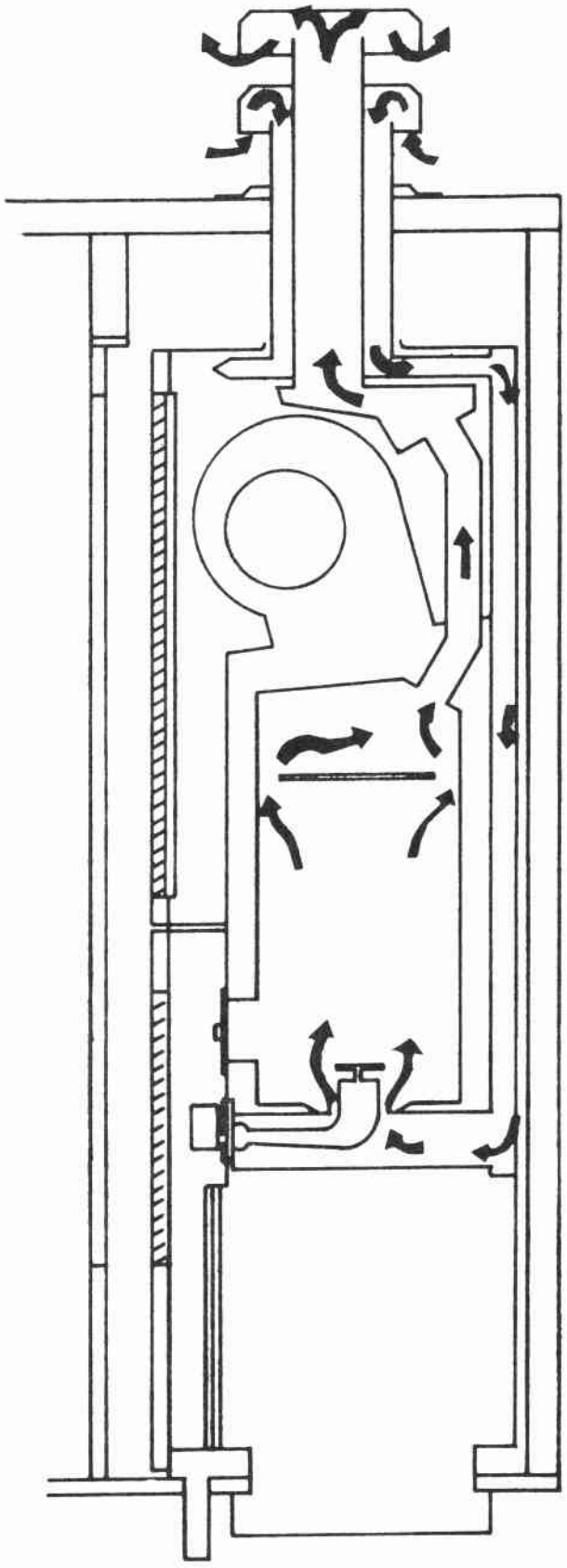


Figure 8.

INSTALLATION INSTRUCTIONS

2. *Circulating air* — Warm air is distributed through the duct system by the circulating blower located at the top of the furnace. The operation of the blower is controlled by the fan switch which senses the heat inside the furnace. This is an automatic switch, located inside the control panel.

3. *Fresh air* — Some coaches, due to location, may have an excessive moisture problem. In some cases the moisture problem may be so bad that condensation may cause water spotted walls or ruined paint jobs. When the air is warm, the moisture in the coach is invisible. Since warm air can hold more moisture than cold air, air containing too much water vapor condenses to form frost or water whenever it comes in contact with a cold surface. One of the most common illustrations of visible condensation in the coach is the formation of water or frost on the windows.

   Cooking, washing, bathing, etc., all add moisture to the air, and large amounts show up as condensation. The small rectangular chute on the bottom of the furnace brings in fresh air to the circulating blower.

   The fresh air which is brought into the circulating blower is then distributed as warm air through the duct system. This cool outside air, after being warmed, is capable of absorbing moisture, thus helping to reduce condensation.

4. *Return air* — The louvers on the top front of the furnace admit return air. Return air must be provided back to the circulating blower in order to provide air distribution. Do not enclose the furnace or otherwise obstruct these louvers. To do so will cause the furnace to limit and go to pilot.

   The Presidential furnaces are designed to give superior air-handling capabilities. This results in an air temperature rise of 165°F. compared to the 200°F. rise that the Solar Paks were designed for. If you use less than 200 square inches free area return grille you are reducing the air flow across the heat exchanger and just asking for service problems resulting in high temperature cycling on heating.

   To avoid operational problems on the 7660 furnace, the 7660-5491 return air grille must be used. This grille has 200 square inches of free area and the use of less free area can result in operational problems.

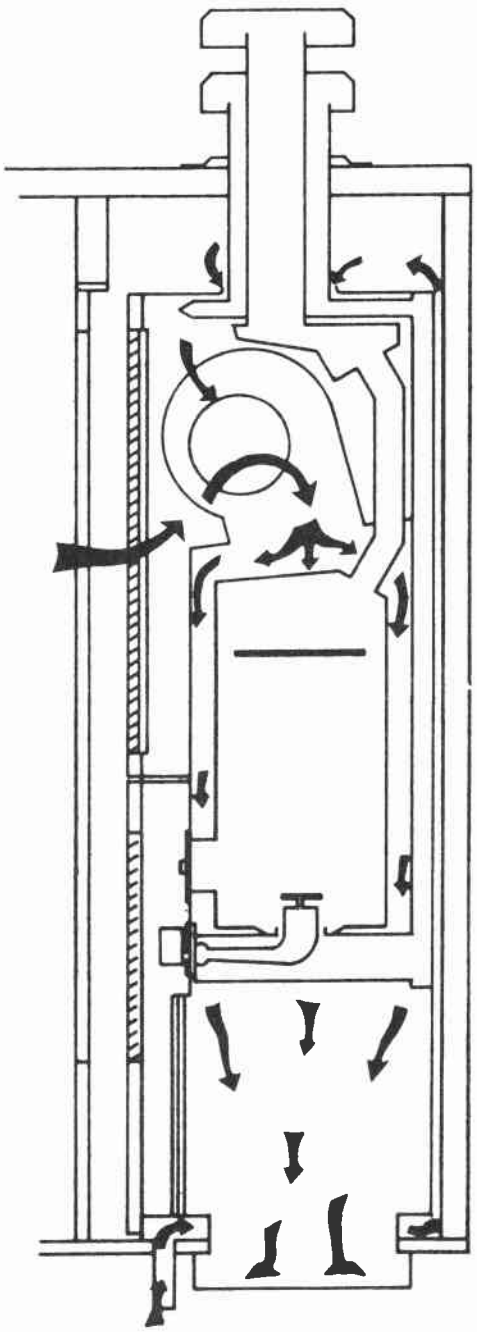


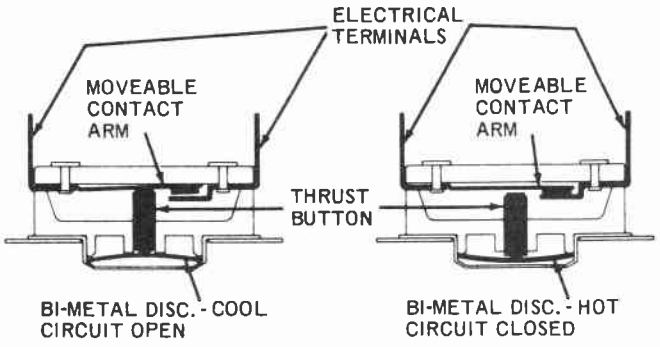
Figure 9.

FAN SWITCHES

The furnace is equipped with one fan switch located at the top of the control panel. This switch is a normally open switch that closes with a rise in temperature. The fan switch is a disc type switch that is calibrated to close at 105°, and open at 90°.

As in the case of a limit switch, the temperature on the fan switch does not necessarily mean that the air will be the same temperature. A fan switch, due to its location on the furnace, might actually start the blower at an outlet air temperature that is above the calibrated temperature.

The disc switches used are marked to indicate the temperature at which the switch will open — or close — and the type switch being used. For example, a marking of F140-30 means that the switch is a fan switch set to turn the blower on at 140° and shut of at 110° (140 - 30 = 110).



FAN SWITCH

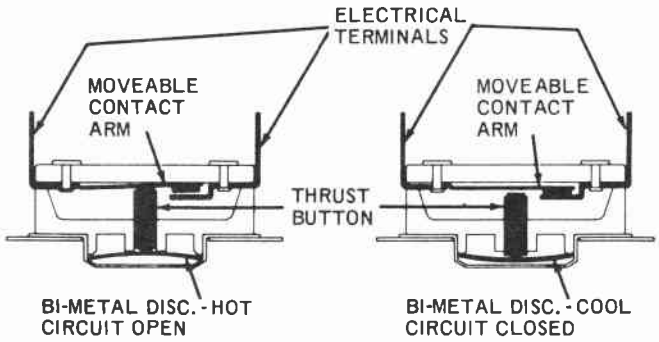
LIMIT SWITCHES

Each furnace is equipped with two limit switches. The upper limit switch is located on the left side of the blower housing in the blower compartment. The upper limit shuts the furnace off in case the upper portion of the furnace overheats. An overheating condition could exist at the top of the furnace because of circulating blower failure, electrical failure, or overfiring of the furnace.

The lower limit shuts the furnace off in case of excessive heat build up in the lower portion of the furnace. The lower limit switch is located at the bottom of the control wiring box. Some common causes of overheating in this region are restricted ducts, too many floor registers closed, or restricted inlet, i.e. dirty filter, clothes hanging near or over the inlet area.

The lower limit will automatically reset when the air temperature has cooled down.

The disk thermoswitch is operated by the heating and cooling of a bi-metal disk. Under "hot" conditions, the bi-metal disk will snap inward thrusting the electrical contacts open; thereby breaking the electrical circuit. Upon cooling, the bi-metal disk will snap back out and let the contacts close which will then let electrical power pass through without interruption.



LIMIT SWITCH

THERMOSTATS

Shown below are the two thermostats used with the PRESIDENTIAL gas furnace.

Figure 10 shows the Camstat T17H-180N heating only thermostat. Figure 11 shows the Camstat CB35-E-1F sub-base which contains the cooling thermostat. The combination heating cooling thermostat is obtained when the T17H-180N heating thermostat is affixed to the CB35E-1F sub-base. When connecting the thermostat combination for heating/cooling operation, connect the thermostat wires to R, Y, W, and G on the CB35E-1F sub-base. Figure 12 shows the internal wiring of the camstat thermostat. The White Rodgers heating/cooling sub-base is pictured in Figure 13 and Figure 14 shows the internal wiring for the White Rodgers thermostat.

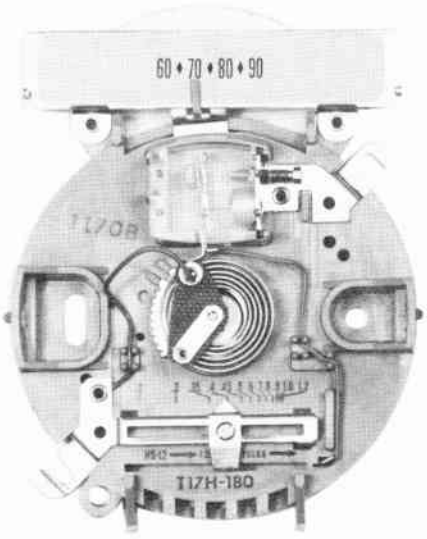


Figure 10. Camstat Heating Only Thermostat

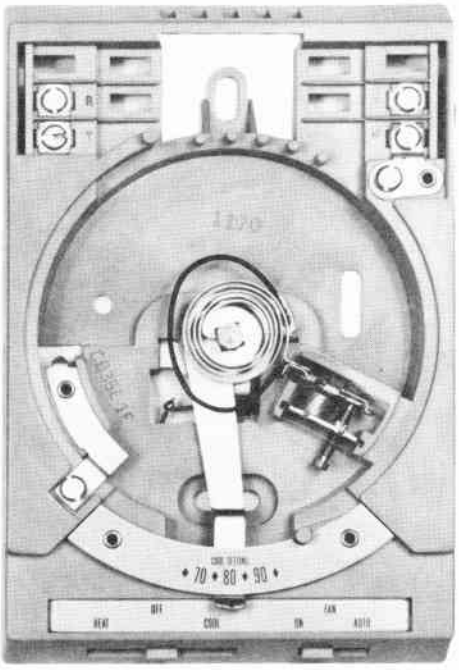


Figure 11. Camstat Cooling Sub-Base

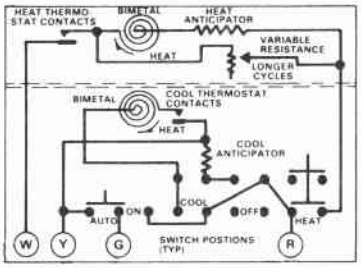


Figure 12. Camstat Internal Wiring

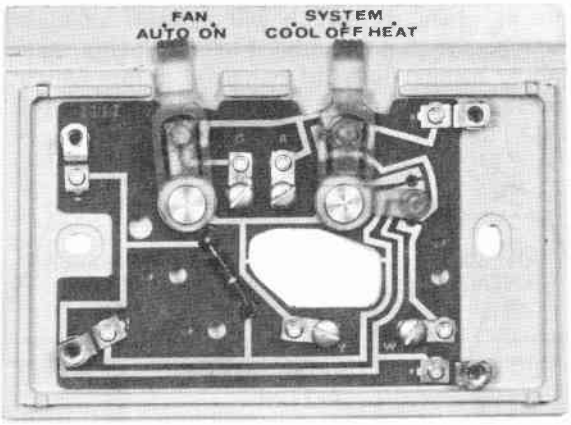


Figure 13. White Rodgers Thermostat

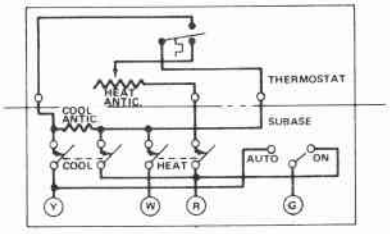


Figure 14. White Rodgers Heat/Cool Thermostat Internal Wiring

ANTICIPATION

The operation of a low voltage thermostat based solely on mechanical means, generally results in wide variations in temperature in the conditioned area whether the application is for heating or cooling. To insure a more precise control of area temperature, low voltage thermostats contain heating and cooling anticipators.

In addition to improved room temperature control, heat anticipation contributes to better air circulation. The burner may cycle on and off several times during one cycle of the fan. Since heat anticipators are powered and effective only during the heating cycle, they are placed in series with the control contacts. When the contacts are closed, power is supplied to the heat anticipator resistor.

MANUAL SWITCHING OPERATIONS

Generally, a sub-base used to control both heating and cooling equipment will contain two switches, one marked "FAN" and one marked "SYSTEM."

FAN SWITCH

ON — Constant fan. The fan will run continuously regardless of the thermostat demand.

AUTO — The fan runs only as required by the system operation.

SYSTEM SWITCH

HEAT — Heating system only, operates in response to the thermostat.

OFF — Heating system and cooling system both off.

COOL — Cooling system only, operates in response to the thermostat.

CAUTION: Care should always be taken in the alignment of the thermostat attaching screws, as they may also serve as terminal connectors. If threads are stripped, a poor electrical connection will result.

INSTALLATION AND SERVICE

1. A low voltage thermostat is a precision instrument and should be treated as one. Care must be used to insure a level installation with thermostats using mercury bulbs.
2. Mount on a solid wall.
3. Locate the thermostat on an inside wall four to five feet above the floor in an area free from drafts and direct sunlight. Do not locate where directly affected by lamps, fireplaces, appliances, or on walls containing hot or cold pipes, ducts, chimneys.
4. Be sure anticipator matches or is adjusted to match current (amp) draw of equipment being controlled.
5. Make all wiring connections clean and tight.

If a heating system has an improperly sized anticipator and excessive heat is generated in the thermostat, the result is a short "on" cycle. During periods when the system is running close to its full capacity, more of the heat sensed by the bi-metal is from the anticipator than from room air; and the controlled area temperature will progressively decrease.

Insufficient heat anticipation in a heating system results in the bi-metal lagging behind the room temperature change. This will cause longer "on" and longer "off" periods with a resultant larger room temperature variation.

A common heating valve current draw is 0.4 amps, and this should be matched on any adjustable anticipator. If the adjustable anticipator is set appreciably higher, for example 0.7 amps, it will increase the room temperature variations by 3°F. or 4°F. and cause longer running cycles.

For longer "on" periods, set the heat anticipation adjustment pointer at slightly higher amp value. For shorter "on" periods, set the pointer at slightly lower amp value. Move only ¼ to ½ scale division at a time. (Never set the pointer at more than 1½ scale divisions below the amp rating of the valve or relay current rating.)

The anticipation function in a cooling thermostat is the reverse of its heating application. The cooling anticipator is powered during the "off" cycle. As the room temperature increases, heat is applied to the bi-metal decreasing the time necessary for the bi-metal to close the contacts. Excessive cool anticipator temperature results in shorter "off" periods, consequently, more frequent cycling of the cooling equipment. Insufficient anticipation in a cooling thermostat causes long "off" and "on" cycles resulting in larger temperature variations in the room.

ANTICIPATION PROBLEMS

HEATING

SETTING TOO LOW

1. Excess anticipation "on" cycles too short.
2. Rapid cycling.
3. Small temperature swings from the setting with a tendency to drop.

SETTING TOO HIGH

1. Insufficient anticipation "on" cycles too long.
2. Infrequent cycling.
3. Wide temperature swings from the set point with a tendency to lag.

COOLING

RESISTOR TOO SMALL

1. Voltage too low.
2. Short "off" time.
3. Short "on" time.
4. Rapid cycling.
5. Temperature maintained closer to the set point with a tendency to rise.

RESISTOR TOO LARGE

1. Voltage too high.
2. "Off" time too long.
3. "On" time too long.
4. Fewer "on" cycles.
5. Wide temperature swings from the set point with a tendency to lag.

LIGHTING INSTRUCTIONS

CAUTION: When lighting the furnace it is important that steps 1 through 6 of the Lighting Instructions be followed to purge the combustion chamber of any gas that might be present in the combustion chamber.

LIGHTING INSTRUCTIONS

1. Turn thermostat to its lowest setting.
2. Remove furnace door.
3. Open inspection door.
4. Depress and turn the gas valve control knob to "OFF."
5. Close main gas valve.
6. *Wait 15 minutes.*

   CAUTION: Since the gas valve in this furnace is a step opening valve, the following procedure should be used when lighting the pilot.
7. Turn gas valve "ON".
8. Insert match in lighter rod.
9. Turn gas valve control knob to pilot.
10. Depress control knob and light pilot.
11. Keep dial depressed for 60 seconds or until pilot remains lit.
12. Replace inspection door.
13. Turn dial to "ON."
14. Replace furnace door.
15. Use the thermostat to cycle the burner "OFF" and "ON" several times to be certain that the burner ignites properly.
16. Set the thermostat to the desired temperature.

This procedure will allow the gas valve to function properly by permitting a minimum flow of gas to the main burner at the start. The valve then will continue to open gradually till full flow is obtained.

SHUTDOWN INSTRUCTIONS

1. Set wall thermostat to lowest temperature.
2. TEMPORARY SHUTDOWN: Turn gas valve dial to pilot position.
3. COMPLETE SHUTDOWN: Depress dial and turn clockwise to "OFF."
4. Turn system switch to "OFF."

WIRING THE FURNACE

Connect the 115 volt 60 cycle leads to the "pigtails" in the wiring box at the top of the wiring panel. Secure with two wire nuts. Connect the low voltage wires to the thermostat.

All electrical wiring within the furnace has been made at the factory. All wiring connected to the unit must comply with the National Electric Code and any applicable local codes and regulations. A separate circuit with a fused disconnect should be provided from the main fuse box to the furnace.

The wiring diagrams shown in figures 15, 16, 17, 18 and 19 present a visual picture of the various electrical circuits to be found in the 7600 Gas Presidential Furnaces.

Figures 20, 21, 22 and 23 show the low voltage wiring for the various furnace, condensing units, and thermostat combinations.

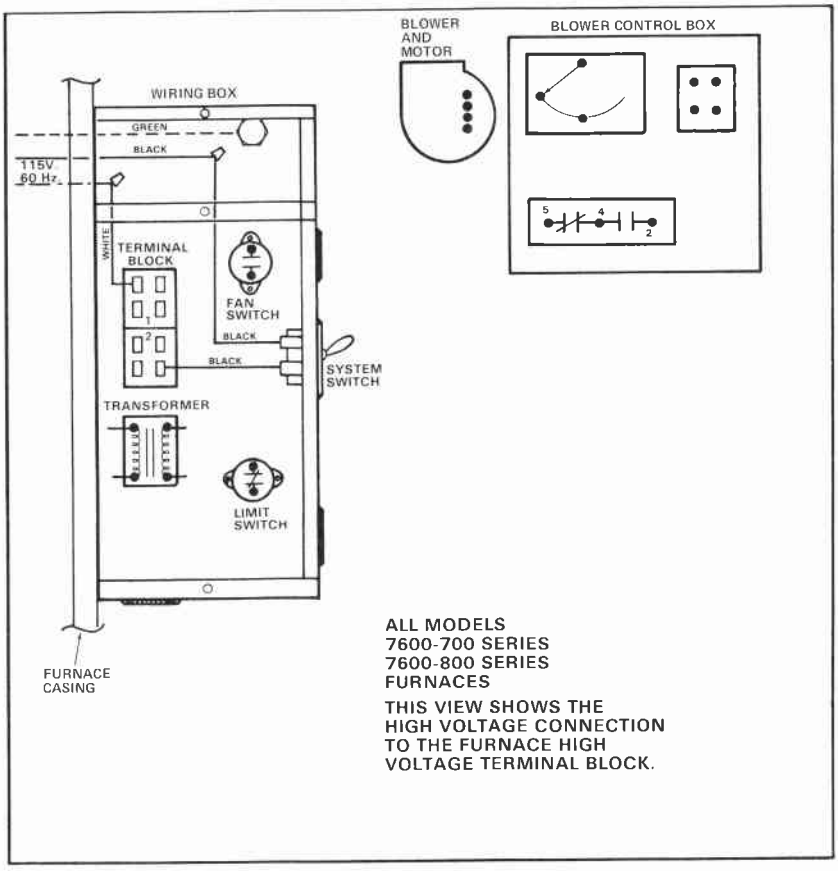


Figure 15

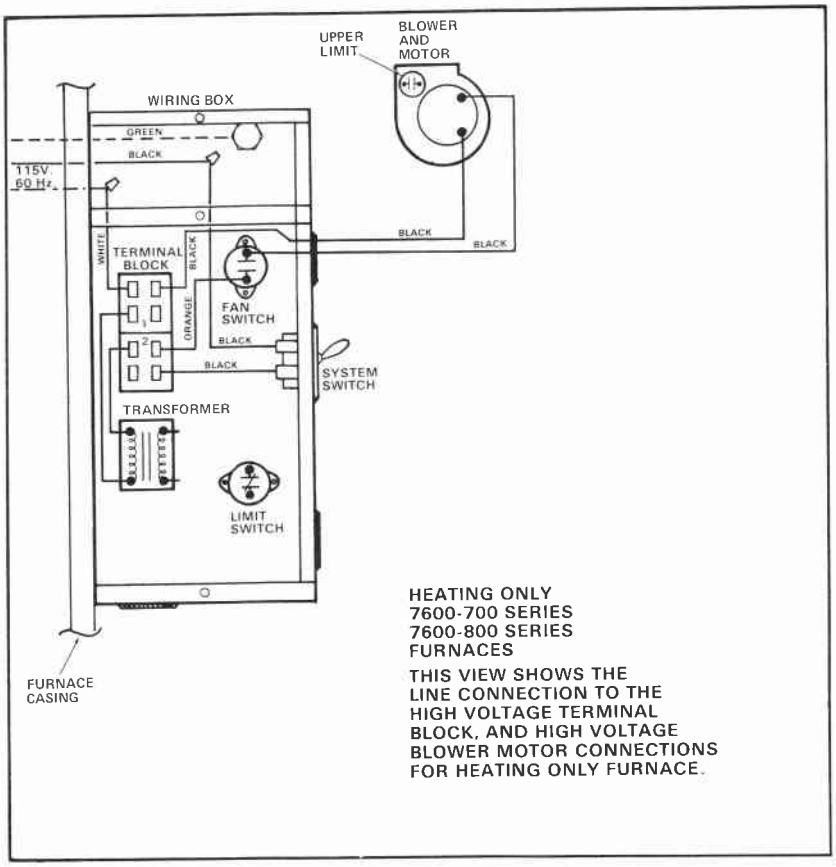


Figure 16

ELECTRICAL CIRCUITS

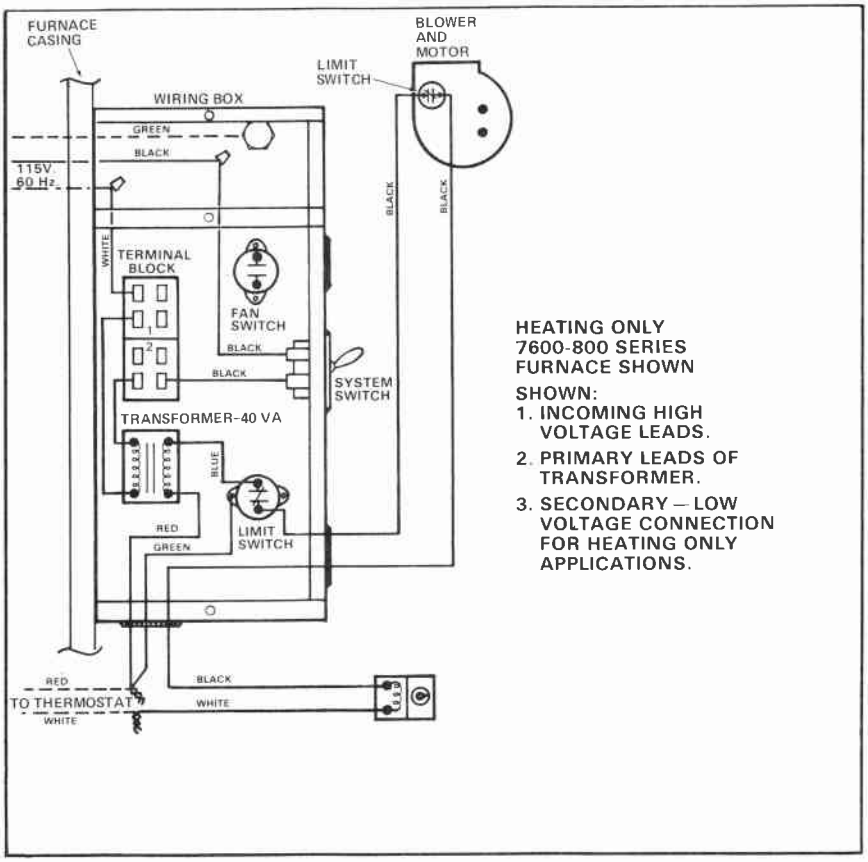


Figure 17

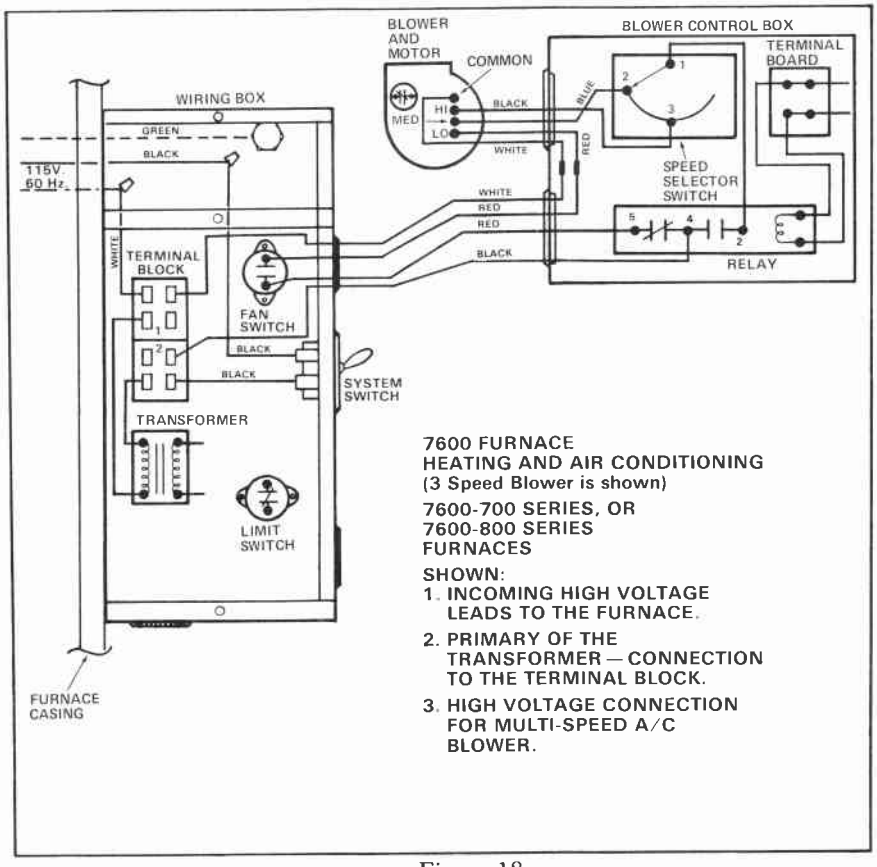


Figure 18

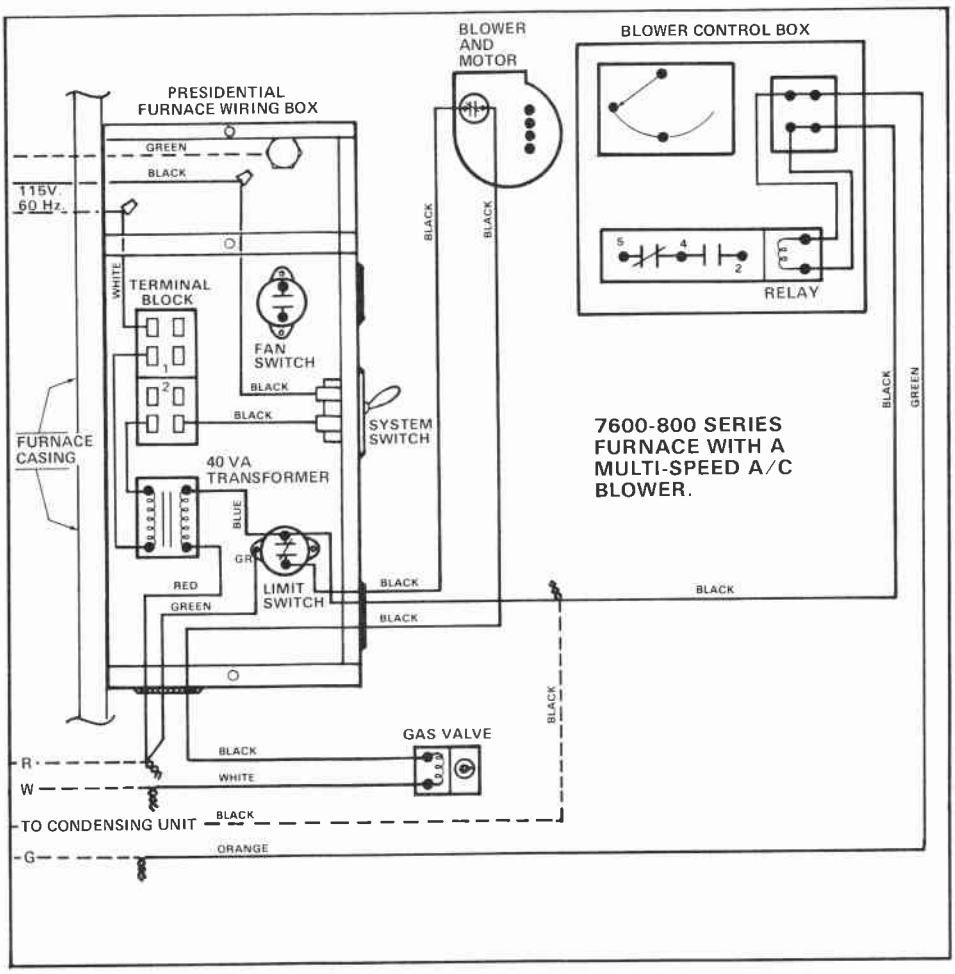


Figure 19

In Figure 19 the primary purpose is to show the internal low voltage circuit of the furnace. In the above example, the black wire goes to the condensing unit, and a yellow wire runs from the condensing unit to the "Y" terminal of the thermostat. See Figures 20, 21, 22 and 23 for complete low voltage connections.

WIRING DIAGRAM

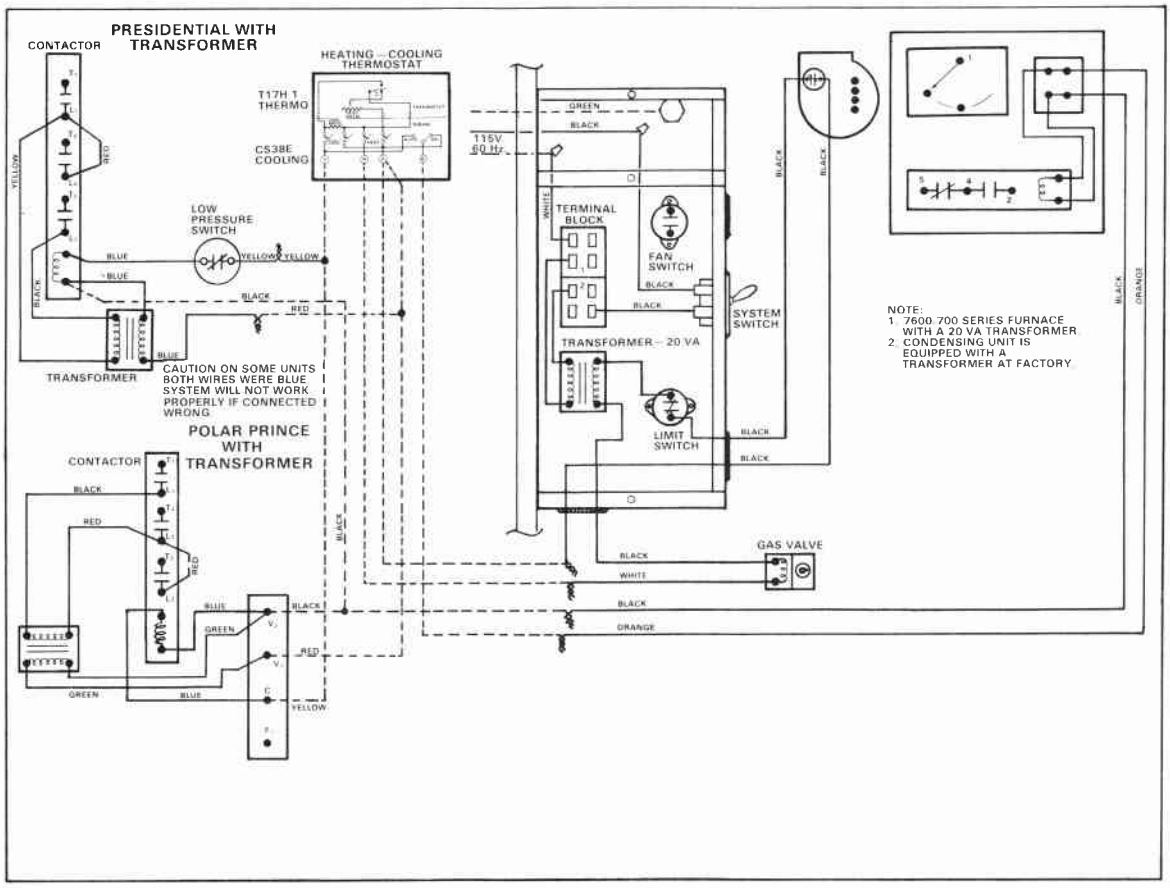


Figure 20

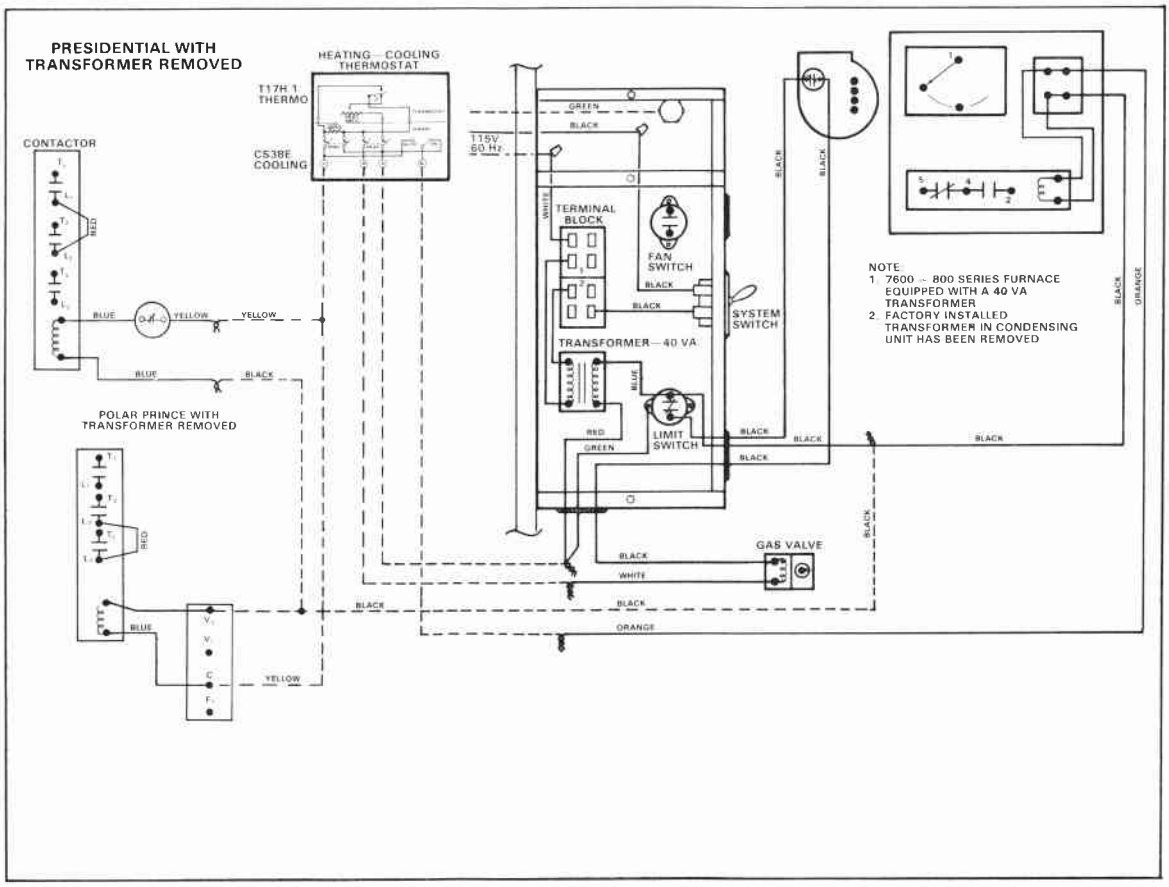


Figure 21

WIRING DIAGRAM

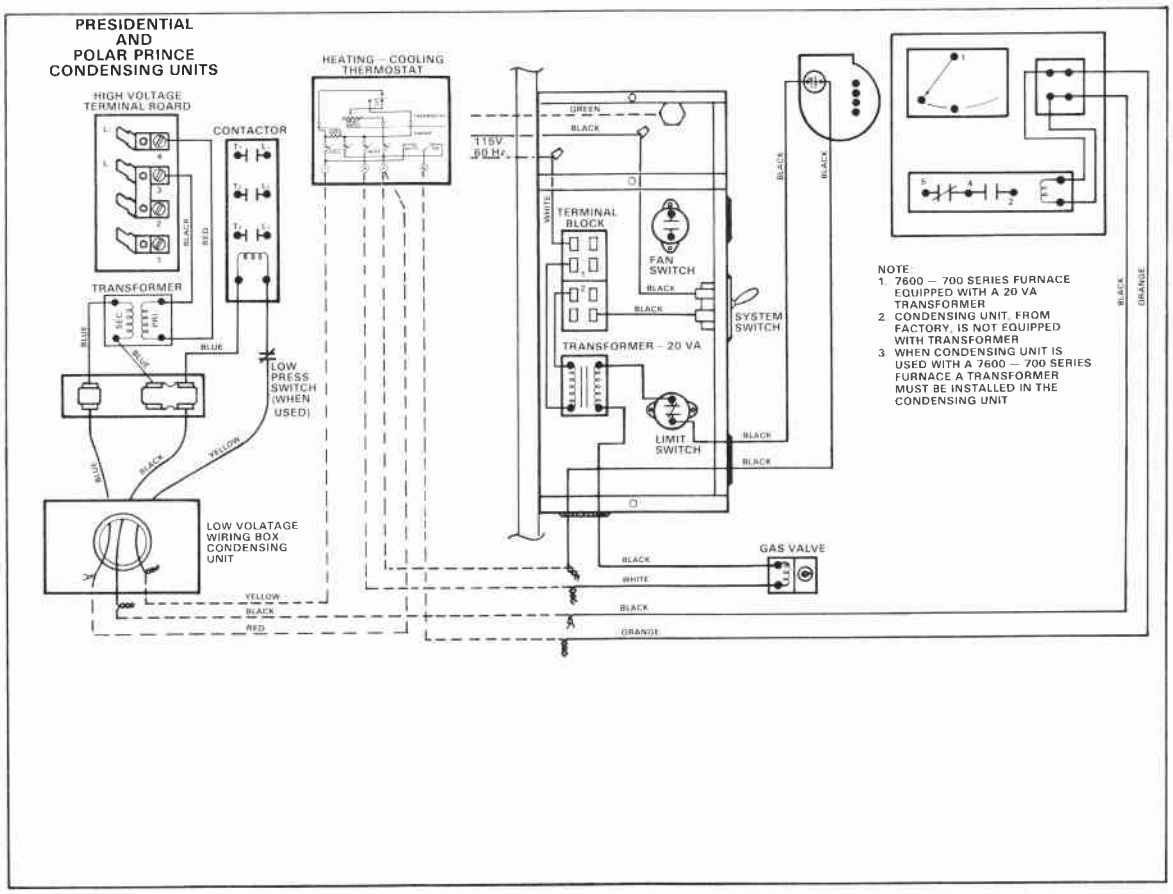


Figure 22

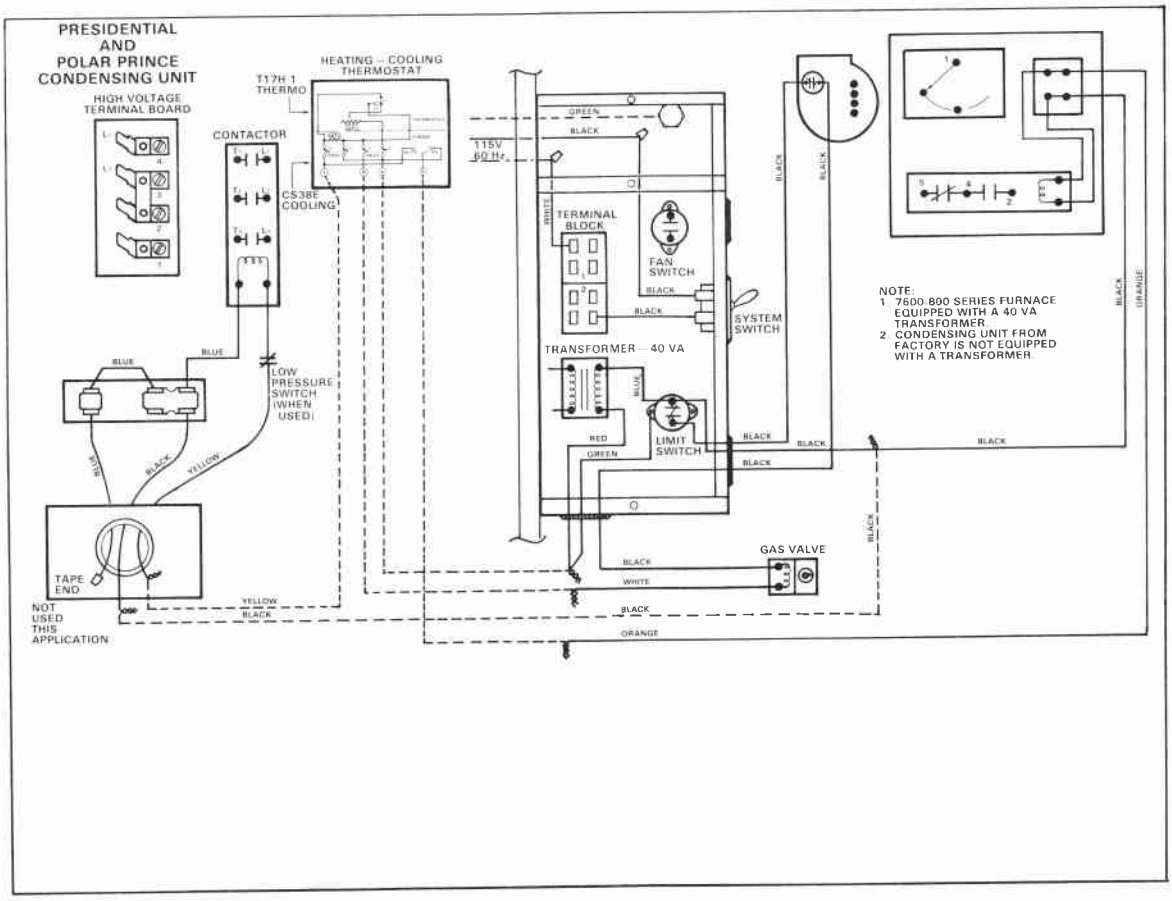


Figure 23

INSTALLATION INSTRUCTIONS

7660A6901, 7660-6931, 7660-6921

Air Conditioning Blower Packages

APPLICATION

The Coleman 7660A6901 blower, equipped with 4 speed blower motor; 7660-6931 blower, equipped with 3 speed blower motor; and 7660-6921 blower, equipped with 2 speed blower motor are for use on all 7600 series Presidential Gas Furnaces. The 7660A6901 can be set at low, medium, or high speeds to match from 2 to 3½ tons of air conditioning. The 7660-6931 can be set at low or high speeds to match 2 to 3½ tons of air conditioning. The 7660-6921 goes to one air conditioning speed automatically, to match 2 or 2½ tons of air conditioning.

The 7600-700 series Presidential Gas Furnaces contain a 20 V.A. transformer. A 20 V.A. transformer is not large enough to energize the contactor in an air conditioning condensing unit. Coleman Mobile Home Condensing Units have been produced both with and without their own transformer. If you are adding air conditioning to a 7600-700 series furnace, the condensing unit must contain a transformer. In the event that there is no transformer in the condensing unit, one must be ordered (p/n 6272-3451) and installed. The various wiring hook-ups may be found below under "Wiring."

The 7600-800 series Presidential Gas Furnaces have 40 V.A. transformers factory installed. This series furnace was designed to accommodate add-on air conditioners with no transformer in the condensing units. If adding a condensing unit to this series furnace, and the condensing unit does have a transformer, it must be disconnected and removed. For correct wiring procedures, see the "Wiring" section below.

INSTALLATION OF BLOWER

1. Shut off electrical supply to furnace at breaker box.
2. Remove upper door of furnace.
3. Remove cover of furnace control box.
4. Remove completely, the orange wire that connects the fan switch to the terminal block.
5. Remove the black motor leads from the terminal block and pull the motor leads from the control box.
6. Remove the auxiliary limit wires from the auxiliary limit terminals on the left side of the blower before removing the blower from the furnace.
7. Remove the three screws from the front support and one thru each side of the blower.
8. Slide the heating blower out of the furnace.
9. Slide the air conditioning blower into the furnace.
10. Secure the new blower by replacing the five screws used to secure the old blower.
11. Connect the four wire leads from the blower control box to the furnace control box.
    a. White lead to common on terminal block or number 1 side.
    b. Black lead to hot on terminal block or number 2 side.
    c. Two red leads to fan switch.
12. Connect the auxiliary limit wire from the furnace control box to the auxiliary limit on the left side of the blower.
13. Set up air conditioning speed switch on the four and three speed blowers as follows:

7660A6901 4 speed blower	high – 3½ tons of air conditioning med – 3 tons of air conditioning low – 2-2½ tons of air conditioning
7660-6931 3 speed blower	high – 3 tons of air conditioning low – 2-2½ tons of air conditioning

The 7660-6921 two speed air conditioning blower goes to the one air conditioning speed automatically, to match 2 to 2½ tons of air conditioning.

WIRING

General:

Remove the cover of the heating thermostat that is located on the wall of the home.

Remove the two wires connected to the two terminals (screws) on the heating thermostat.

Remove the heating thermostat from the wall and keep for installing the heat-cool thermostat.

Install the thermostat cooling sub-base, packed with the new blower, on the wall in place of the heat thermostat.

NOTE: Five-wire thermostat cable is required for installing the 'heat-cool' thermostat when using two transformers (7600-700 series).

Four-wire thermostat cable is required for a single transformer installation (7600-800 series).

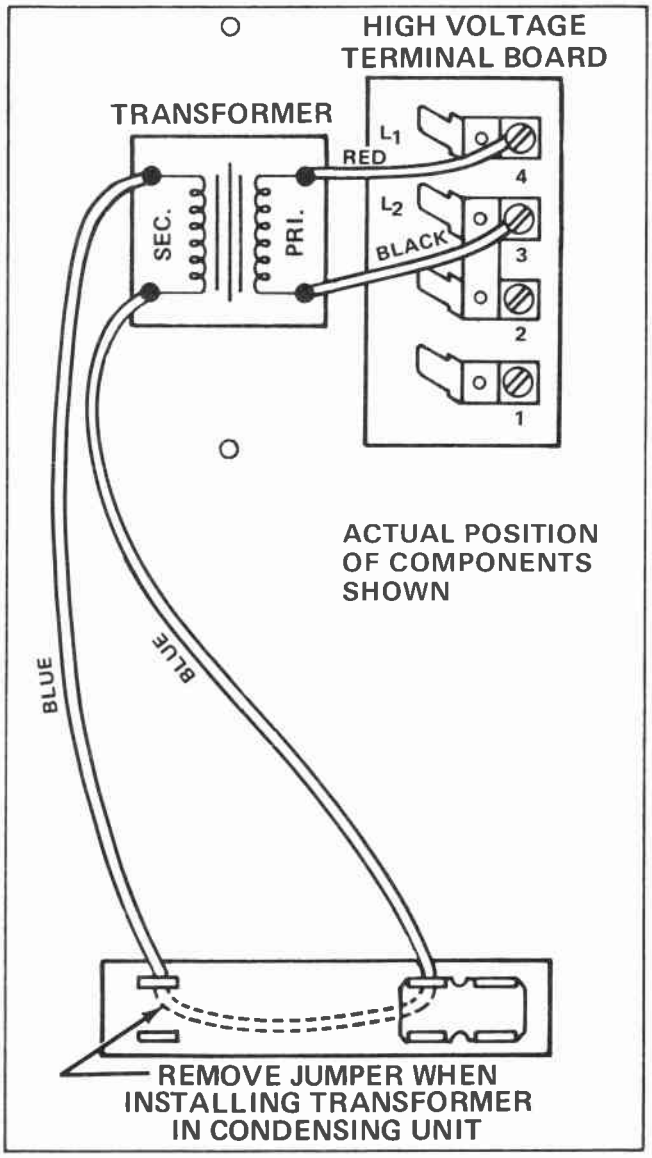
7600-700 Series (Two Transformer):

A. When connecting the low voltage wiring for 7660-700 series furnaces with an air conditioning blower in conjunction with a condensing unit, WITH A TRANSFORMER, use wiring diagram:

1970A517 for 2 transformers and 4 speed blower or
1970-600 for 2 transformers and 3 speed blower or
1970-610 for 2 transformers and 2 speed blower, and follow the instructions below.

1. Standard Polar Prince Condensing Unit (with transformer):
   a. Connect black wire from terminal board on side of blower control box to V_2 on terminal board of condensing unit.
   b. Connect green wire from terminal board on side of blower control box to "G" on the 'heat-cool' sub-base.
   c. Run thermostat wire from "W" on 'heat-cool' sub-base to terminal on gas valve. (In add-on air conditioning, use wire from valve that was attached to heat thermostat.)
   d. Run one thermostat wire from "R" on sub-base to furnace control box and wire-nut it to the black wire extending from auxiliary limit in furnace. (In add-on air conditioning, use wire that was attached to heat thermostat.)
   e. Run a second thermostat wire from "R" on sub-base to V_1 on low voltage terminal board of condensing unit.
   f. Connect the last thermostat wire to "C" on terminal board of condensing unit and "Y" on sub-base.
2. Presidential Condensing Unit (with transformer):
   a. Connect black wire from terminal board on side of blower control box to "piggy-back" terminal on transformer side of contactor in condensing unit.
   b. Connect green wire from terminal board on side of blower control box to "G" on 'heat-cool' sub-base.
   c. Run thermostat wire from "R" on sub-base to black wire extending from auxiliary limit switch in furnace, and wire-nut together in furnace control box. (In add-on air conditioning, use wire from valve that was attached to heat thermostat.)
   d. Run thermostat wire from "Y" on sub-base to wire extending from low pressure switch in condensing unit, and wire-nut together.
   e. Run white wire from gas valve to "W" on thermostat sub-base. (In add-on air conditioning, use wire that was attached to heat thermostat.)
   f. Route the last thermostat wire from "R" on sub-base to blue wire extending from low voltage side of transformer in condensing unit, and wire-nut together.

B. When installing an air conditioning blower in a 7600-700 series furnace in conjunction with a condensing unit, NOT CONTAINING A TRANSFORMER, order and install a 6272-3451 transformer in the condensing unit per the instructions below.
   1. To install the 6272-3451 transformer in the 6270 series POLAR PRINCE condensing units, See Figure 19.

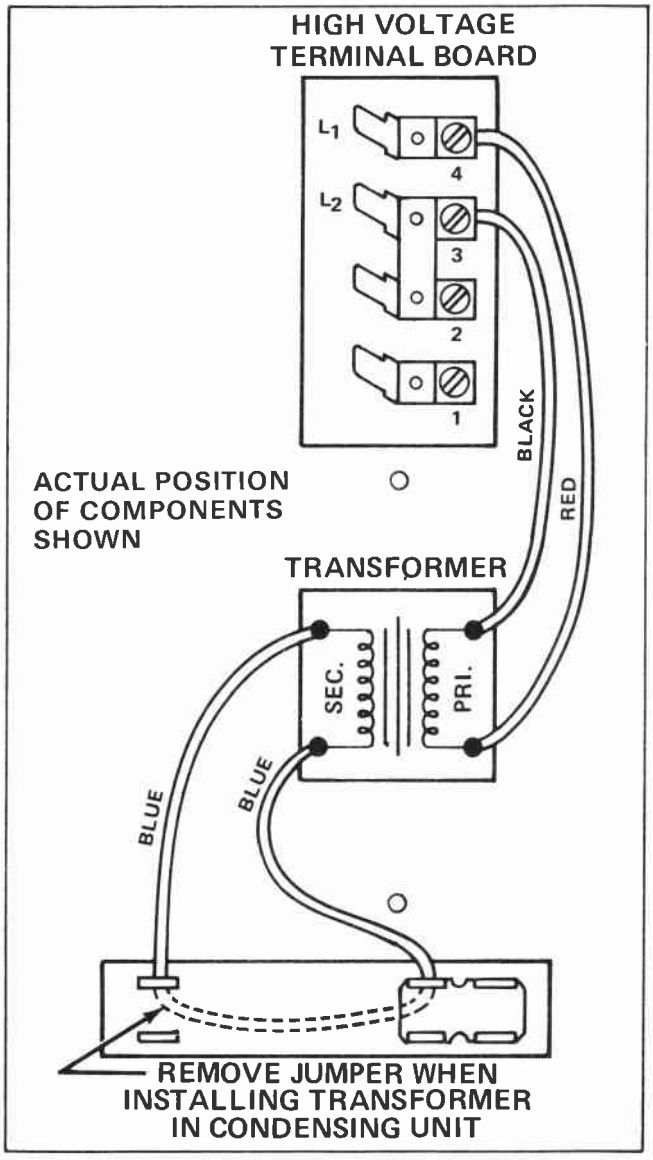


When installing a transformer in the POLAR PRINCE condensing units connect transformer as shown above.

Figure 24

   a. Connect the red wire, primary side of transformer, to No. 4 on the high voltage terminal board.
   b. Connect the black wire, primary side of transformer, No. 3 on the high voltage terminal board.
   c. Remove the jumper from the low voltage terminal block.
   d. Connect two blue wires from the transformer (secondary) to the terminals that contained the jumper. See Figure 19.
   2. To install the 6272-3451 transformer in the 6280 series PRESIDENTIAL condensing units, follow the above procedure, and refer to Figure 20.

INSTALLATION INSTRUCTIONS



When installing a transformer in the PRESIDENTIAL condensing units connect transformer as shown above.

Figure 25

3. Standard Polar Prince Condensing Unit (with field installed transformer):
   a. Route black wire from terminal board on side of blower control box to wire nut on black wire in the condensing unit low voltage box.
   b. Green wire from terminal board on side of blower control box to "G" on 'heat-cool' thermostat sub-base.
   c. White wire from gas valve in furnace to "W" on the 'heat-cool' thermostat sub-base.
   d. Run one thermostat wire from "R" on sub-base to black wire extending from auxiliary limit switch in furnace and wire nut together in furnace control box. (In add-on air conditioning, use wire that was attached to heat thermostat.)
   e. Route blue wire in condensing unit low voltage box to "R" on 'heat-cool' thermostat sub-base.
   f. Route yellow wire in condensing unit low voltage box to "Y" on 'heat-cool' thermostat sub-base.
4. Presidential Condensing Unit (with field installed transformer):

The wiring for this condensing unit is identical to number 1 above.

7600-800 Series (One Transformer):

A. When connecting the low voltage wiring from 7660-800 series furnaces with an air conditioning blower in conjunction with a condensing unit, NOT CONTAINING A TRANSFORMER, use Wiring Diagram:

   1970A596 for 1 transformer and 4 speed blower or
   1970A598 for 1 transformer and 3 speed blower or
   1970A611 for 1 transformer and 2 speed blower and follow the directions below.

   1. Standard Polar Prince Condensing Unit (without transformer):
      a. Route black wire from terminal board on side of blower control box to wire nut on black wire hanging from the side of the furnace control box.
      b. Route black wire from low voltage box of condensing unit to wire nut on black wire hanging from side of furnace control box. There should now be three wires tied together at this point.
      c. Green wire from terminal board on side of blower control box to "G" on 'heat-cool' thermostat sub-base.
      d. White wire from gas valve in furnace to "W" on the 'heat-cool' thermostat sub-base.
      e. Red and green wires tied together from bottom of furnace control box to "R" on 'heat-cool' thermostat sub-base.
      f. Yellow wire from low voltage box of condensing unit to "Y" on 'heat-cool' thermostat sub-base.
   2. Presidential Condensing Unit (without transformer):
      a. Route black wire from terminal board on side of blower control box to wire nut on black wire hanging from the side of the furnace control box.
      b. Route black wire from low voltage box of condensing unit to wire nut on black wire hanging from side of furnace control box. There should now be three wires tied together at this point.
      c. Green wire from terminal board on side of blower control box to "G" on 'heat-cool' thermostat sub-base.
      d. White wire from gas valve in furnace to "W" on the 'heat-cool' thermostat sub-base.
      e. Red and green wires tied together from bottom

of furnace control box to "R" on 'heat-cool' thermostat sub-base.

f. Yellow wire from low voltage box of condensing unit to "Y" on 'heat-cool' thermostat sub-base.

B. When installing an air conditioning blower in a 7600-800 series furnace, in conjunction with a condensing unit CONTAINING A TRANSFORMER, it will be necessary to disconnect and remove the transformer from the condensing unit, and wire as follows, by referring to the appropriate one transformer wiring diagram:

1. Standard Polar Prince Condensing Unit (with transformer):

a. Remove transformer from condenser.

b. Run red wire from transformer in furnace to "R" on thermostat sub-base.

c. Run white wire from gas valve to "W" on sub-base.

d. Run green wire from terminal board on side of blower control box to "G" on sub-base.

e. Run low voltage wire from V_2 on low voltage terminal board of condensing unit to "Y" on sub-base.

NOTE: There is a black wire extending from the lower limit switch through the side of the furnace wiring box, with a wire nut attached to it. The next two steps pertain to this wire.

f. Connect the black wire from terminal board on side of blower control box to above noted wire.

g. Connect a low voltage wire from "C" on condenser low voltage terminal board to above noted wire.

NOTE: There will now be three wires together in the wire nut noted above.

2. Presidential Condensing Unit (with transformer):

a. Remove transformer from condensing unit.

b. Run red transformer wire from in furance to "R" on 'heat-cool' thermostat sub-base.

c. Run white wire from gas valve to "W" on sub-base.

d. Run green wire from terminal board on side of blower control box to "G" on sub-base.

e. Connect low voltage wire from low pressure switch in condenser to "Y" on sub-base.

NOTE: There is a black wire extending from the lower limit switch through the side of the furnace wiring box, with a wire nut attached to it. The next two steps pertain to this wire.

f. Connect the black wire from terminal board on side of blower control box to above noted wire.

g. Connect a low voltage wire from side of contactor pull-in coil opposite low pressure switch to above noted wire.

NOTE: There will now be three wires together in the wire nut noted above.

Replace cover of furnace control box.

Replace upper door of furnace.

Lock the heating thermostat on the cooling sub-base, by placing the hooks on the heating thermostat beside the screws on cooling sub-base and twisting slightly in a clockwise motion. Tighten screws.

Replace cover of thermostat.

Turn on electrical supply to furnace.

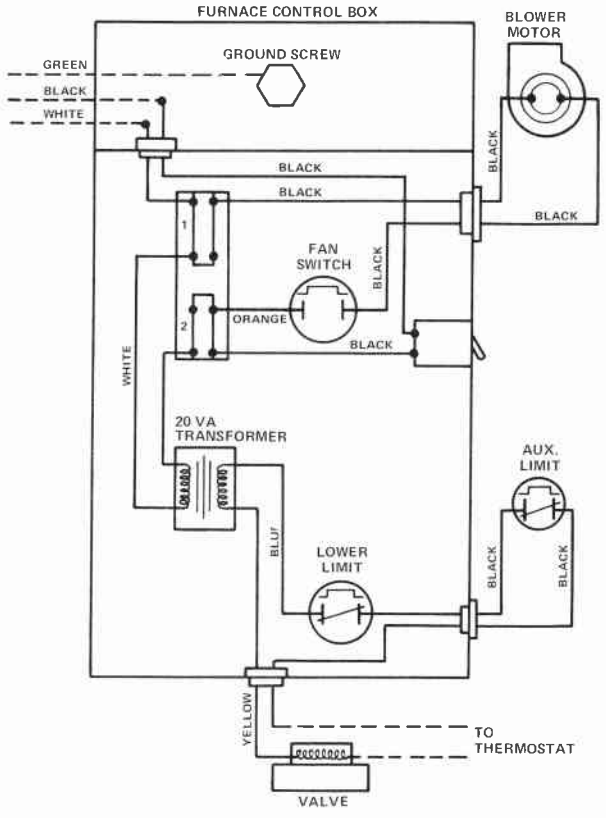


Figure 26

WIRING DIAGRAM

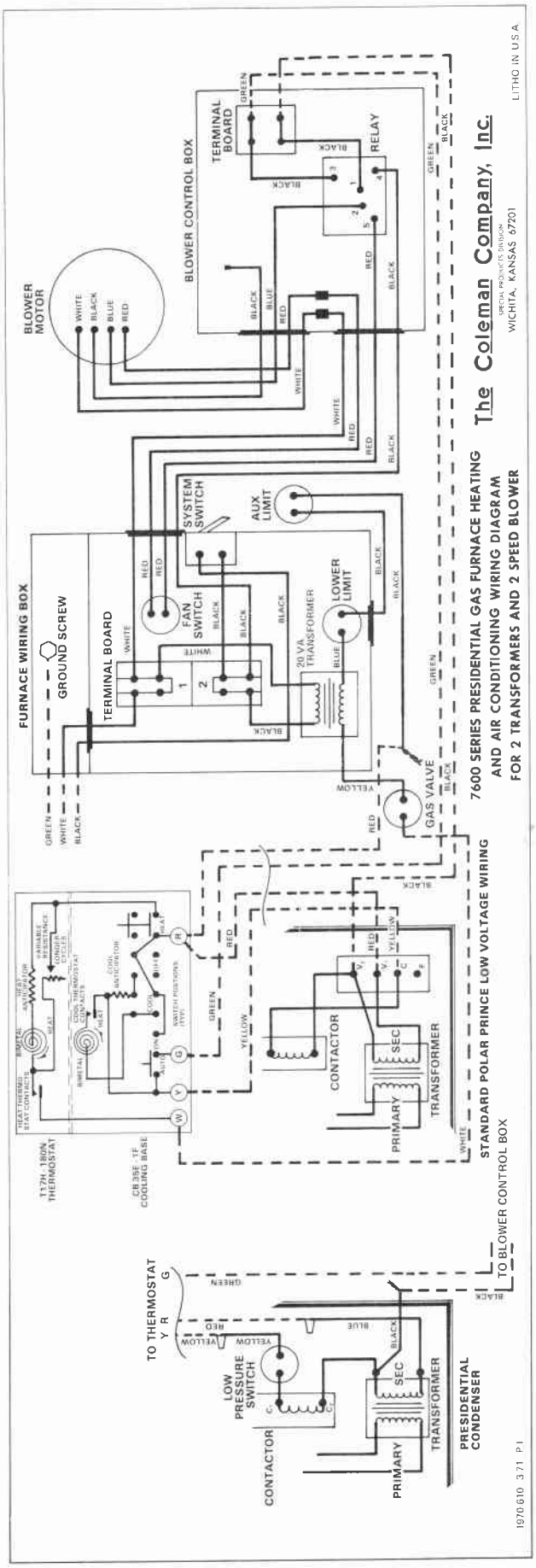


Figure 27

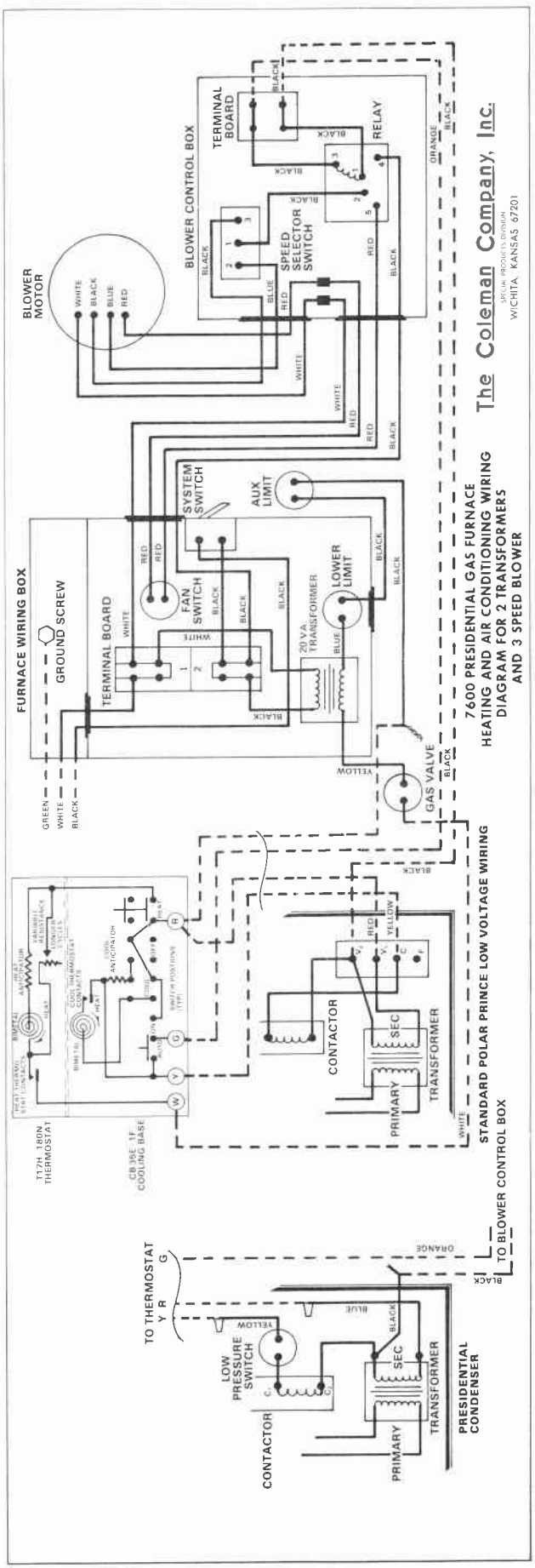


Figure 28

WIRING DIAGRAM

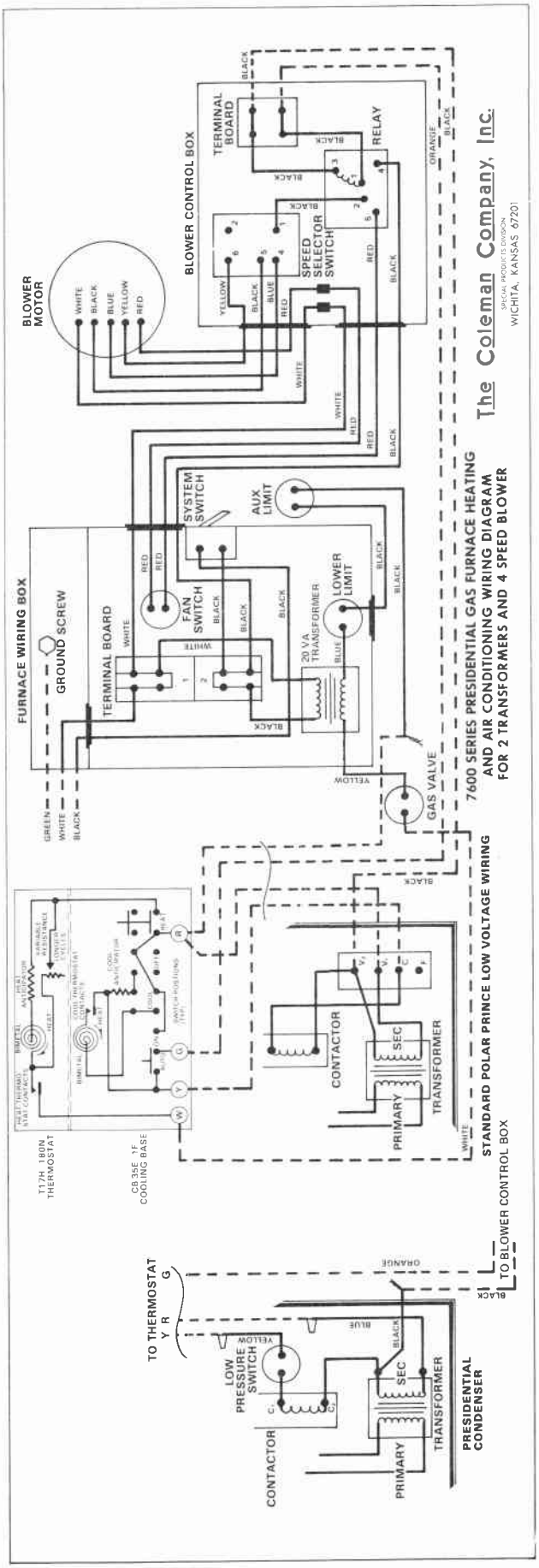


Figure 29

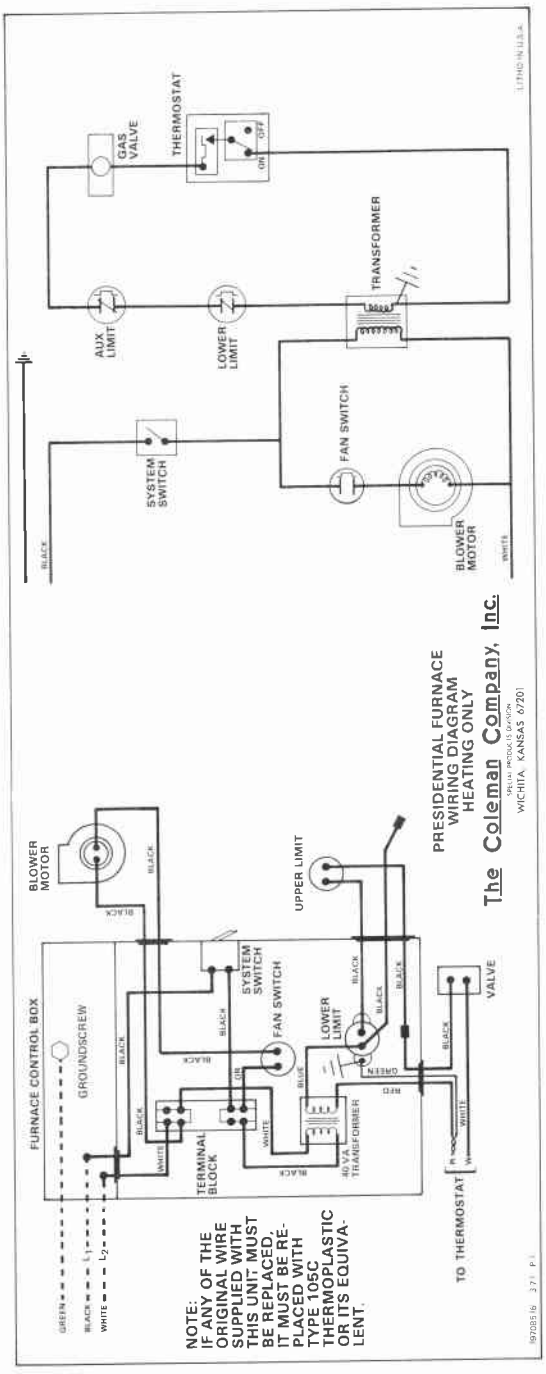


Figure 30

WIRING DIAGRAM

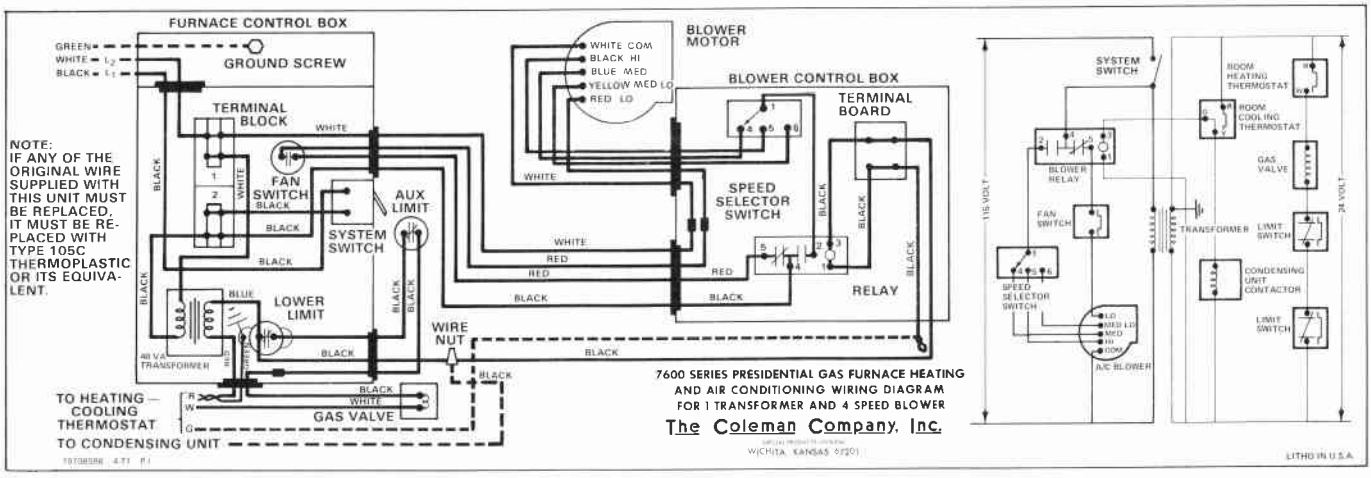

FURNACE CONTROL BOX
GROUND SCREW
TERMINAL BLOCK
FAN SWITCH
AUX LIMIT
SYSTEM SWITCH
LOWER LIMIT
WIRE NUT
GAS VALVE
TO HEATING — COOLING THERMOSTAT
TO CONDENSING UNIT
BLOWER MOTOR
BLOWER CONTROL BOX
TERMINAL BOARD
SPEED SELECTOR SWITCH
RELAY
NOTE:
IF ANY OF THE ORIGINAL WIRE SUPPLIED WITH THIS UNIT MUST BE REPLACED, IT MUST BE REPLACED WITH TYPE 105C THERMOPLASTIC OR ITS EQUIVALENT.
7600 SERIES PRESIDENTIAL GAS FURNACE HEATING AND AIR CONDITIONING WIRING DIAGRAM FOR 1 TRANSFORMER AND 4 SPEED BLOWER
The Coleman Company, Inc.
WICHITA, KANSAS 67201
LITHO IN U.S.A.

Figure 31

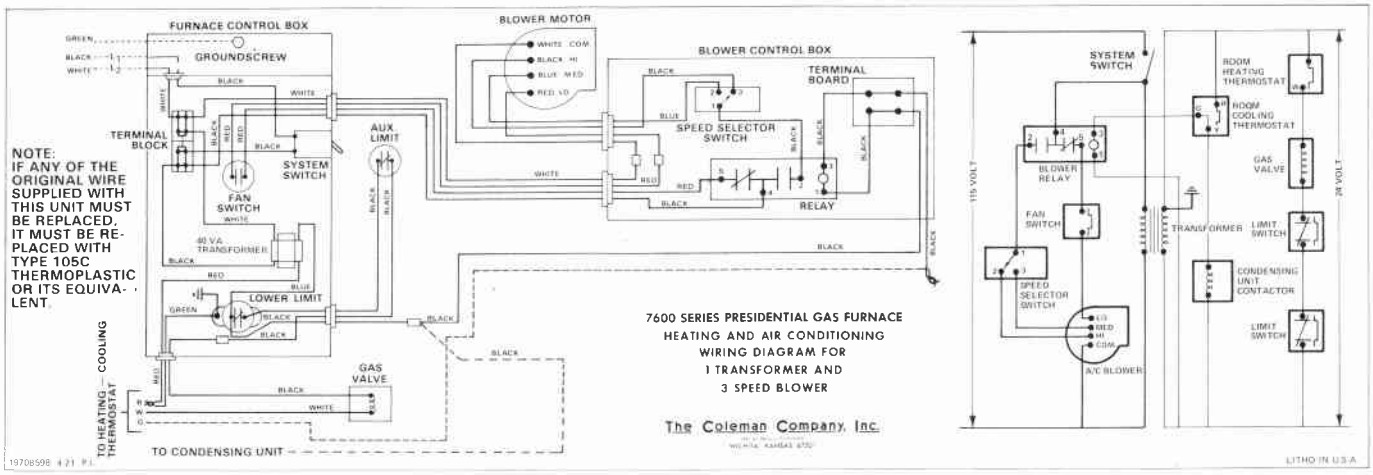

FURNACE CONTROL BOX
GROUNDSCREW
TERMINAL BLOCK
FAN SWITCH
AUX LIMIT
SYSTEM SWITCH
LOWER LIMIT
GAS VALVE
TO HEATING — COOLING THERMOSTAT
TO CONDENSING UNIT
BLOWER MOTOR
BLOWER CONTROL BOX
TERMINAL BOARD
SPEED SELECTOR SWITCH
RELAY
NOTE:
IF ANY OF THE ORIGINAL WIRE SUPPLIED WITH THIS UNIT MUST BE REPLACED, IT MUST BE REPLACED WITH TYPE 105C THERMOPLASTIC OR ITS EQUIVALENT.
7600 SERIES PRESIDENTIAL GAS FURNACE HEATING AND AIR CONDITIONING WIRING DIAGRAM FOR 1 TRANSFORMER AND 3 SPEED BLOWER
The Coleman Company, Inc.
LITHO IN U.S.A.

Figure 32

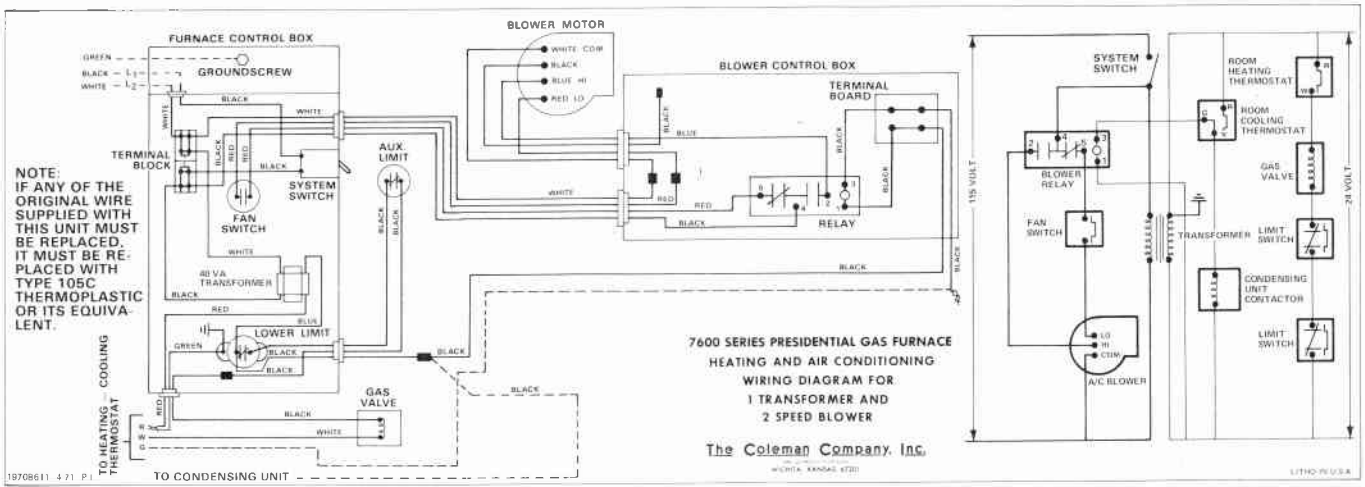

FURNACE CONTROL BOX
GROUNDSCREW
TERMINAL BLOCK
FAN SWITCH
AUX LIMIT
SYSTEM SWITCH
LOWER LIMIT
GAS VALVE
TO HEATING — COOLING THERMOSTAT
TO CONDENSING UNIT
BLOWER MOTOR
BLOWER CONTROL BOX
TERMINAL BOARD
SPEED SELECTOR SWITCH
RELAY
NOTE:
IF ANY OF THE ORIGINAL WIRE SUPPLIED WITH THIS UNIT MUST BE REPLACED, IT MUST BE REPLACED WITH TYPE 105C THERMOPLASTIC OR ITS EQUIVALENT.
7600 SERIES PRESIDENTIAL GAS FURNACE HEATING AND AIR CONDITIONING WIRING DIAGRAM FOR 1 TRANSFORMER AND 2 SPEED BLOWER
The Coleman Company, Inc.
LITHO IN U.S.A.

Figure 33

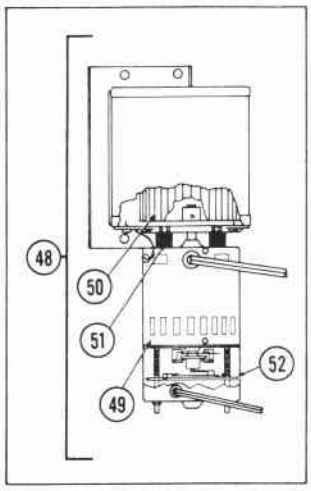
PRESIDENTIAL GAS FURNACES

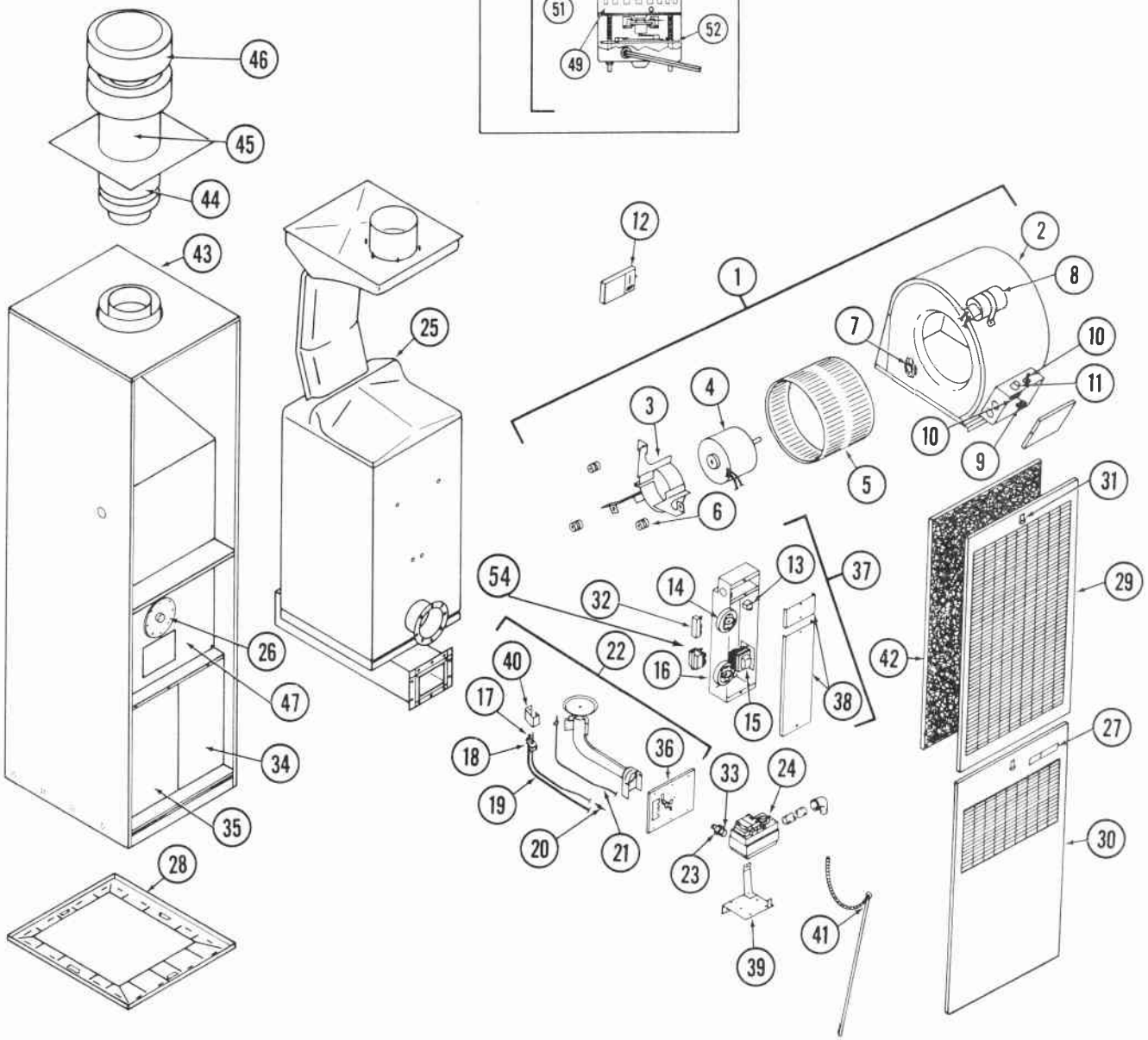
7660, 7656, 7670, 7663, 7680, 7700

HTG. & A/C

REPAIR PARTS

BOOSTER ASSEMBLY
for
7700 ONLY





PRESIDENTIAL GAS FURNACES

7660, 7670, 7670A, 7680, 7680A

REPAIR PARTS

+FIRST PRODUCTION SERIAL #4700000
*FIRST PRODUCTION SERIAL #174000
**FIRST PRODUCTION SERIAL #274000

Model	Nat.	L.P.	BTU Input	BTU Output
+7660	756, 856, 846	759, 859, 849	60,000	48,000
+7670	756, 856, 846	759, 859, 849	70,000	56,000
*7670A	856	859	70,000	56,000
+7680	756, 856, 846	759, 859, 849	80,000	64,000
**7680A	856	859	80,000	64,000

For Furnace Parts, use illustration on page 2-3
For Blower Parts, use list on page 2-7

ORIFICES

Model	Nat.	L.P.
7660	9951-1441	9951-0821
7670, 7670A	9951-1591	9951-0891
7680, 7680A	9951-1661	9951-0961

CODE	USED ON MODELS	NO. REQ.	PART NUMBER	DESCRIPTION
12	7660, 7670, 7680	1	7670-3751	Thermostat — 24V (W-R 1D30-303 4 wire)
	7670A, 7680A		7670-3951	Thermostat (W-R 1D30-339 2 wire)
13	All	1	7660-3511	Switch (on-off) (Carling MAA0A8L)
14	7660	1	7660-3281	Fan Switch (C-110° 0-90° T120601F134-40)
	7670, 7680	1	7700-3281	Fan Switch (C-120° 0-90° T120601C)
15	All	1	7660B3501	Transformer (115/24 V40 VA) (Basler BE112460001)
16	7660, 7670	1	7660-3591	Limit Switch (0150° C-130° T120601L9)
	7680	1	7680-3591	Limit Switch (0155° C-135° T120601L9-718)
17	All	1	9850A0161	Pilot Burner (G-C 26T0306TV016)
18	All	1	9966-0161	Pilot Spud (G-C 101045HE016)
19	All	1	7660-1661	Pilot Tube (1/4 OD Steel)
20	All	1	2631-3471	Thermocouple (G-C 2500G24)
21	All	1	2004-1561	Bleed Line (1/8 OD)
•22	All	1	7660A5281	Burner Assy. (includes Codes 17 thru 21, 36 & 40)
23	All			Note: See chart above for orifice size.
24	All	1	7660-3261	Gas Valve — (G-C B57Z101)
25	7660	1	7660-5751	Heat Exchanger (w/gaskets)
	7670	1	7670-5751	Heat Exchanger (w/gaskets)
	7680	1	7680-5751	Heat Exchanger (w/gaskets)
26	All	1	7660-3661	Cap (w/sight glass)
27	7660, 7670, 7680	1	7660A3801	Nameplate
	7670A, 7680A	1	7670-380	Coleman Emblem
28	All	1	7660-1601	Sub-Base
29	7660, 7670, 7680	1	7660-5231	Upper Panel (w/latch)
	7670A, 7680A	1	7670-5231	Panel — Upper
30	7660, 7670, 7680	1	7660A5241	Lower Panel (w/latch)
	7670A, 7680A	1	7670A5241	Panel — Lower
31	All	1	7660-2301	Latch Assy. (front panel)
32	All	1	8665-3361	Terminal Board (Molex 749-4-4)
33	All	1	7660-1851	Spud Mount (less orifice)
†34	All	1	7660-5201	Panel (for air conditioning only)
		1	7660-5211	Panel (for air conditioning only)
		1	7670-5201	Panel Assy. (for heating only)
36	All	1	7660-5101	Mounting Plate — Burner
37	All	1	7660B5401	Control Box (w/trans. & fan switch)
38	All	1	7660-1831	Covers — Control Box, upper & lower
39	All	1	7660-5111	Valve Bracket
40	All	1	7660A1461	Pilot Shield
41	All	1	7660-5701	Lighter Rod (w/chain)
42	All	1	7660-3401	Filter (19-5/8 x 35-3/4 x 1/2 If filter retainers are required, order Part Number 7660-5331)
43	7660, 7670, 7680	1	7660-1041	Casing Top
	7670A, 7680A		7670-1041	Casing Top
44	All	1	7660-3471	Flue Pipe
45	All	1	7660-5461	Inner Roof Jack
46	All	1	7660-2811	Chimney Crown
47	All	1	7660-5471	Door Plate Assy.

•Does not include gas valve
†Code 34 replaces 7660-5201 & 7660-5211 panels on serial #773000 and above

*FIRST PRODUCTION #1271000
+FIRST PRODUCTION #274000

Model	Nat.	L.P.	Description	BTU Input	BTU Output
*7700	856	859	Heating Only	100,000	80,000
+7700A	856		Heating Only	100,000	80,000

For Furnace Parts, use illustration on page 2-3
For Blower Parts, use list on page 2-7

CODE	USED ON MODELS	NO. REQ.	PART NUMBER	DESCRIPTION
12	7700	1	7670-3751	Thermostat — 24V (W-R 1D30-303 4 wire)
	7700A		7670-3951	Thermostat (W-R 1D30-339 2 wire)
13	All	1	7660-3511	Switch (on-off) (Carling MAA0A-BL)
14	All	1	7700-3281	Fan Switch (C-120° 0-90° T120601F)
15	All	1	7660B3501	Transformer (115/24V 40VA) (Basler BE11246001)
16	All	1	7700-3591	Limit Switch (lower) (C-135° 1-165° TOD60T-11)
17	All	1	9850A0161	Pilot Burner (GC 26T0306TV016)
18	All	1	9966-0161	Pilot Spud (mk'd .016) (G.C. 1010954E016)
19	All	1	7660-1661	Pilot Tube (1/4 OD steel)
20	All	1	2631-3471	Thermocouple (G.C. 2500G24)
21	All	1	2004-1561	Bleed Line (1/8 OD)
•22	All	1	7700-5281	Burner Assy. (includes codes 17 thru 21, 36 & 40)
23	All	1	9951-1821	Nat. Orifice (mkd .182)
			9951-1101	LP Orifice (mkd .110)
24	All	1	7700-3261	Gas Valve (in/out 1/2) (G.C. K47RDB58)
25	All	1	7700-5751	Heat Exchanger (w/gasket)
26	All	1	7660-3661	Cap (w/sight glass)
27	7700	1	7660A3801	Nameplate
	7700A		7670-380	Coleman Emblem
28	All	1	7660-1601	Sub-Base
29	7700	1	7660-5231	Upper Panel (w/latch)
	7700A		7670-5231	Panel — Upper
30	7700	1	7660A5241	Lower Panel (w/latch)
	7700A		7670A5241	Panel — Lower
31	All	1	7660-2301	Latch Assembly (front panel)
32	All	1	8665-3361	Terminal Board (Molex 749-4-4)
33	All	1	7700-1851	Spud Mount (less orifice)
†34	All	1	7660-5201	Panel (for air conditioning only)
	All	1	7660-5211	Panel (for air conditioning only)
	All	1	7670-5201	Panel Assy. (for heating only)
36	All	1	7660-5101	Mounting Plate — Burner
38	All	1	7660-1831	Covers — Control Box upper & lower
39	All	1	7660-5111	Valve Bracket
40	All	1	7660A1461	Pilot Shield
41	All	1	7660-5701	Lighter Rod (w/chain)
42	All	1	7660-3401	Filter (19-5/8 x 35-3/4 x 1/2 if filter retainers are required, order Part Number 7660-5331)
43	7700	1	7660-1041	Casing Top
	7700A		7670-1041	Casing Top
44	All	1	7660-3471	Flue Pipe
45	All	1	7660-5471	Inner Roof Jack
46	All	1	4050-5551	Chimney Crown
47	All	1	7660-5471	Door Plate Assembly
48	All	1	7700-6351	Booster Assembly (includes code 48 thru 52)
49	All	1	7700-3149	Booster Motor — 3000 RPM (Fasco 7121-2842)
50	All	1	8865-3611	Impellor (3-13/16 x 1-7/8 x 3/8) (Torr. AA326-128)
51	All	1	8865B1281	Motor Mount (rubber 4/pkg.)
52	All	1	7700-2751	Snap Switch (Robertshaw 7120)
53	All	1	7670-5091	Air Chute (pkg. x 10)
54	All	1	8665-5701	Booster Relay (8665-309 RBM 84-50902-101)

*Not Shown
•Does not include gas valve
+Code 34 replaces 7660-5201 & 7660-5211 Panels on Serial #773000 and above

UP-FLOW GAS FURNACES

7656, 7656A, 7663, 7663A

HEATING ONLY

REPAIR PARTS

*FIRST PRODUCTION SERIAL #1072000
+FIRST PRODUCTION SERIAL #174000

Model	Nat.	L.P.	BTU Input	BTU Output
*7656	856	859	56,500	45,200
+7656A	856	859	56,500	45,200
*7663	856	859	62,500	50,000
+7663A	856	859	62,500	50,000

For Furnace Parts, use illustration on page 2-3
For Blower Parts, use list on page 2-7

ORIFICES

Model	Nat.	L.P.
7656, 7656A	9951-1361	9951-0821
7663, 7663A	9951-1441	9951-0861

CODE	USED ON MODELS	NO. REQ.	PART NUMBER	DESCRIPTION
12	7656, 7663	1	7670-3751	Thermostat — 24V (W-R 1D30-303 4 wire)
	7656A, 7663A		7670-3951	Thermostat (W-R 1D30-339 2 wire)
13	All	1	7660-3511	Switch (on-off) (Carling MAA0A-BL)
14	All	1	7660-3281	Fan Switch C-110° 0-90° T120601F134-40
15	All	1	7660B3501	Transformer 115/24V 40VA (Basler BE112460001)
16	All	1	7680-3591	Limit Switch 0-155° C-135° T120601L9-718
17	All	1	9850A0161	Pilot Burner (G-C 26T0306TV016)
18	All	1	9966-0161	Pilot Spud (G-C 1010954E016)
19	All	1	7660-1661	Pilot Tube — 1/4 OD steel
20	All	1	2631-3471	Thermocouple (G-C 2500G24)
21	All	1	2004-1561	Bleed Line — 1/8 OD
•22	All	1	7660A5281	Burner Assembly (includes codes 17 thru 21, 36 & 40)
23	All			Note: See chart above for orifice size.
24	All	1	7660-3261	Gas Valve (G-C B57Z101)
25	7656, 7656A	1	7656-5751	Heat Exchanger (w/gaskets)
	7663, 7663A	1	7660-5751	Heat Exchanger (w/gaskets)
26	All	1	7660-3661	Cap (w/sight glass)
27	7656, 7663	1	7660A3801	Nameplate
	7656A, 7663A		7670-380	Coleman Emblem
28	All	1	7660-1601	Sub-Base
29	7656, 7663	1	7660-5231	Upper Panel (w/latch)
	7656A, 7663A		7670-5231	Panel — Upper
30	7656, 7663	1	7660A5241	Lower Panel (w/latch)
	7656A, 7663A		7670A5241	Panel — Lower
31	All	1	7660-2301	Latch Assembly (front panel)
32	All	1	8665-3361	Terminal Board
33	All	1	7660-1851	Spud Mount (less orifice)
†34	All	1	7660-5201	Panel (for air conditioning only)
	All	1	7660-5211	Panel (for air conditioning only)
	All	1	7670-5201	Panel Assy. (for heating only)
36	All	1	7660-5101	Mounting Plate — Burner
37	All	1	7660B5401	Control Box (w/trans. & fan switch)
38	All	1	7660-1831	Covers — Control Box upper & lower
39	All	1	7660-5111	Valve Bracket
40	All	1	7660A1461	Pilot Shield
41	All	1	7660-5701	Lighter Rod (w/chain)
42	All	1	7660-3401	Filter (19-3/8 x 35-3/4 x 1/4 if filter retainers are required, order Part Number 7660-5331)
43	7656, 7663	1	7660-1041	Casing Top
	7656A, 7663A		7670-1041	Casing Top
44	All	1	7660-3471	Flue Pipe
45	All	1	7660-5461	Inner Roof Jack
46	All	1	7660-2811	Chimney Crown
47	All	1	7660-5471	Door Plate Assembly

•Does not include gas valve
†Code 34 replaces 7660-5201 & 7660-5211 panels on Serial #773000 and above

7660A590	7670A590	7680A590	7700-590	7660-6931	7680-693
7656-856 A856 -859 A859 7660-756 -759 -856 -859 7663-856 A856 -859 A859	7670-756 -759 -856 A856 -859 A859	7680-756 -759 -856 A856 -859 A859	7700-856 A856 -859 A859	7656-846 -849 7660-846 -849 7663-846 -849 7670-846 -849	7680-846 -849

HEATING ONLY

CODE				
1 BLOWER	● 7660A590	● 7670A590	● 7680A590	● 7700-590
2 SCROLL	● 7660-537	● 7670-537		● 7700A538
3 MOTOR CLAMP	*7670-5391			*8680-5391
4 MOTOR	7660-3119 1/10 HP 860 RPM (Universal DA3E190N)	7670-3119 1/6 HP, 860 RPM (Fasco 7151-2291)		7700-3119 1/4 HP, 1000 RPM (GE KSP-30KC6553S)
5 IMPELLOR	7660-3871 7-1/8 x 9-15/16 x 1/2 (Lau 0215S3-03- DD9-7AR)	7670-3871 7-3/16 x 10-3/4 x 1/2 (Lau 021793CA)		
6 MOTOR MOUNT	7670-3551			
7 LIMIT SWITCH	7660-3591 Close 130°, Open 150° (Thermodisc 26T-11)		7680-3791 Close 120°, Open 140° (W-R 3A03-904)	
8 CAPACITOR	NONE			
9 RELAY	NONE			
10 SWITCH	NONE			
11 KNOB	NONE			

●For reference only — not available for shipment.
*When replacing Motor Clamp, new motor mounts will be required.

PRESIDENTIAL GAS FURNACES

7656, 7660, 7663, 7670, 7680, 7700

BLOWER CHARTS

	AIR CONDITIONING			ACCESSORIES	
1	7660-6931	• 7680-693	• 7660-692	7700-6931	7660A6901
2	• 7660-552				
3	6213-1841				
4	7660-3239 1/2 HP, 1025 RPM (Century 13370) 6.0 amp		7660-3249 1/2 HP, 1075 RPM (Century 13001) 7.8 amp, 115 V.		
5	7660-3601 7-3/16 x 12-5/8 x 1/2 (Revcor F1262-700D)				
6	NONE				
7	7660-3591 Close 130° Open 150° (Thermodisc 26T-11)	7680-3791 Close 120° Open 140° (W-R 3A03-904)	7660-3591 Close 130° Open 150° (Thermodisc 26T-11)	7680-3791 Close 120° Open 140° (W-R 3A03-904)	7660-3591 Close 130° Open 150° (Thermodisc 26T-11)
8	6563-3201 7.5 mfd., 370 V.		2633-3301 10 mfd., 370 V (Aerovox P164F70) (Sprague 200P1421)		
9	6313-2281 24 V. SPDT (RBM 84-10103-301)				
10	710A5181 (Carling Electric 2FB54-62)		NONE	7660A3531 (Electron Inc. 2000-C3)	
11	NONE		7660-3521 (Electron, Inc.)		

•For reference only not available for shipment.

Blower	7670-6921 (3 ton-below)	7670-6931 (3 ton-below)	8680-690
Scroll	•7670-637	•7670-552	•8680-552
Motor Clamp	6213-1841		
Motor	7670-3239 Century *134671**½HP, 1025 RPM, 6.6 amp, 115V Marathon W48A110512A		7660-3249 Century 13001 ½ HP, 1075 RPM, 7.8 amp, 115V
Impellor	7670-3871 Lau 021793CA 7-3/16x10-3/4x½	7660-3601 Revcor F1262-700D 7-3/16x12-5/8x½	
Capacitor	6563-3201 7.5 mfd., 370V		2633-3301 10 mfd., 370V
Blower Relay	6313-2281 RBM 84-10103-301 24V SPDT		
Switch (Cont.-Auto)	7670-3531 Carling TGAO 401-TB-B		
Switch (Heat-Cool)	7670-3521 Carling TGDO 411-TB-B		
Resister Assy.	7670-5331 12 watt 150 OHM		8680-5331 12 watt 150 OHM 5 watt 200 OHM
Reversing Relay	7670-3091 RBM 84-50102-201		8680-3091 RBM 184-50114-401
Transformer	None		6282-5451 Basler BE8733KHI 208/240 24V
Term. Board	7670-350 Elec-tron, Inc.		8680-350 Elec-tron, Inc.

•Ref. only. Not available for shipment

UP-FLOW GAS FURNACE

8631, 8632, 8634

LP & NATURAL GAS

REPAIR PARTS